



Buhler Versatile Inc.
Box 7300, 1260 Clarence Ave
Winnipeg, Manitoba R3C 4E8

INSTALLATION INSTRUCTIONS

3-POINT HITCH (W/PTO)

86070394 - BLUE TRACTORS

#86070707 - RED TRACTORS

3-POINT HITCH (W/O PTO)

#86070393 - BLUE TRACTORS

#86070706 - RED TRACTORS

TRACTORS 9280, 9480, 9680, 9880

9282, 9482, 9682, 9882, 9184, 9384, 9484

9684, 9884, 2240, 2270, 2310, 2360, 2425

APPROXIMATE INSTALLATION TIME - 10 - 12 HOURS

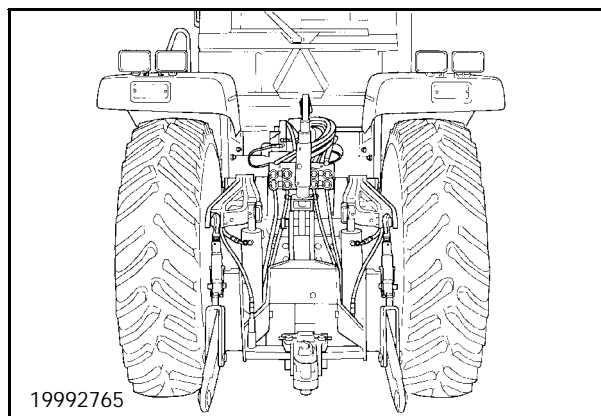
INTRODUCTION

The 3-Point Hitch Kit is designed to mount on all Buhler Versatile Large 4WD tractors. It allows the tractor to utilize 3-point attached implements, increasing the versatility of the tractor. The hitch is classified as a Category IV Narrow (CAT IVN), but can be converted to accept Category III Wide (CAT IIW) implements.

This procedure assumes a CAT IVN installation. To convert from a CAT IVN to CAT IIW, the top link and lower links will be reversed. Additional information for the conversion is located in the appropriate tractor Operator's Manual.

Once installed, the 3-point hitch can be controlled from the cab by a combination of switches and potentiometers. The lift rate is controlled by adjusting the flow control at the remote valve. For additional information, refer to the appropriate tractor Operator's manual.

The text of the installation instructions is divided into four sections; mechanical, hydraulic, electrical and final adjustment installations. The text also identifies differences between tractors with and without an optional PTO and tractors with and without HydraFlow hydraulics.



1

The following chart gives dimensions for CAT IIW and CAT IVN hitches:

Category	IIW and IVN
Upper link pin diameter	45 mm (1.75 in.)
Lift link pin diameter	51 mm (2.00 in.)
Width at hitch point	919 mm (36.18 in.)

KIT CONTENTS

PART #	QTY W/PTO	QTY W/O PTO	DESCRIPTION	WHERE USED
V55505	1	N/A	Top link bracket assembly	Section 1, step 17
86002558	2	N/A	Top link spacer	Section 1, step 17
86011250	2	N/A	3 point hitch mounting bracket	Section 1, step 16
V55488	N/A	1	Upper Mounting bracket	Section 1, step 15
V18160	1	1	Right side sway block	Section 1, step 30
V18161	1	1	Left side sway block	Section 1 step 28
V55539	1	1	Upper link	Section 1, step 36
V55540	2	2	Lift link	Section 1, step 31, 35
V70091	1	1	Lift bracket assembly	Section 1, step 7
V70092	1	1	Lift bracket assembly	Section 1, step 7
N/A	1	1	Rockshaft Assembly	Section 1, step 9
9703812	2	2	Hydraulic cylinder	Section 1, step 22, 27
86000321	1	1	Drawbar cage	Section 1, step 19
86002569	2	2	Lower link	Section 1, step 32, 35
V18171	2	2	Lower cylinder pin	Section 1, step 23, 27
V55507	6	6	Shims	Section 4
V55635	2	2	Lower pin	Section 1, step 34, 35
V55637	1	1	Top pin	Section 1, step 36
V55640	2	2	Upper pin	Section 1, step 24, 27
V55922	2	2	Plate	Section 1, step 33, 35
V63954	3	3	Stud	Section 2, step 8, 9
V100198	2	2	Hydraulic hose	Section 2, step 36
V55644	2	2	Link Pin	Section 1, step 32, 35
86512787	2	2	Groove Pin	Section 1, step 32, 35
9673063	2	2	Hydraulic hose	Section 2, step 33
9673064	1	1	Hose assembly (100R)	Section 2, step 31
86000623	1	1	End cover	Section 2, step 13
86000624	1	1	Hose (560)	Section 2, step 30
86002133	1	1	Valve	Section 2, step 12
86002561	1	1	Bracket	Section 1, step 37
86002564	6	6	Shim 1/4"	Section 4
86002693	2	2	Pin	Section 1, step 31, 35
86050318	1	1	Hydraulic hose	Section 2, step 29
86015981	1	1	Hydraulic hose	Section 2, step 26
V2747	5	5	Bundle strap	As needed
V33451	12	12	Tie strap	As needed
V93021	1	1	Valve seal kit	Section 2, step 11
9673037	1	1	Indicator light	Section 3 step 8
9701029	1	1	Controller	Section 3, step 2
9706434	1	1	3-point hitch wire harness	Section 3, step 12
9824331	4	4	Spring retainer	Section 3, step 9
9848710	2	2	Knob	Section 3, step 9
86000538	2	2	Rocker switch	Section 3, step 3, 5
86002423	1	1	Lowering rate potentiometer	Section 3, step 7
86002448	1	1	Command potentiometer	Section 3, step 6
86002452	1	1	Current controller	Section 3, step 1
V57212	1	1	Upper link decal	Section 1, step 39
V57213	1	1	Upper link decal	Section 1, step 39

PART #	QTY W/PTO	QTY W/O PTO	DESCRIPTION	WHERE USED
V57214	2	2	Category decal	Section 1, step 40, 41
V57215	2	2	Category decal	Section 1, step 40, 41
V57216	1	1	Implement decal	Section 1, step 42
9706934	1	1	Switch plate	Section 3, step 4
9706935	1	1	3 point hitch decal	Section 3, step 4
V15673	1	1	Connector	Section 2, step 22
V18173	4	4	Cylinder spacer	Section 1, step 24, 27
V18790	2	2	Cotter pin	Section 1, step 37
V19104	6	6	Slotted spring pin	Section 1, step 23, 26, 27
V22913	2	2	90_ elbow	Section 2, step 19, 20
V30944	2	2	Flange screw 1/2"	Section 1, step 33, 35
V55661	2	2	Spacer	Section 1, step 32, 35
V55957	1	1	Snapper pin	Section 1, step 36
V56007	1	1	Upper bushing	Section 4
V70253	1	1	Hydraulic union tee	Section 2, step 14
70783	2	2	Cap screw M	Section 1, step 31, 35
76352	2	2	90_ elbow (37D-NP)	Section 2, step 18, 20
80680	6	6	Lock washer	Section 2, step 8, 9, 13
84384	1	1	Hydraulic adapter	Section 2, step 23
128996	2	2	Union tee (37D)	Section 2, step 32, 35
216773	1	1	90_ elbow (37D-OR)	Section 2, step 24
247780	4	4	Flange nut	Section 4
270184	4	4	Klik pin 1/4"	Section 1, step 34, 35
280744	4	4	Carriage bolt .38 x 2.00	Section 4
9628503	6	6	Nut	Section 2, step 8, 9, 13
9702507	1	1	Connector 3/4"	Section 2, step 25
9804255	4	4	Flange screw M6	Section 3, step 1, 2
86002556	2	2	Lower bushing	Section 4
V44253	8	N/A	Washer	Section 1, step 18
V50133	8	N/A	Cap screw	Section 1, step 18
88557	6	N/A	Cap screw .75 x 2.00	Section 1, step 16
86503612	18	20	Hard washer M20	Section 1, step 9, 16, 17, 28, 30
86512499	42	54	Flange nut M20	Section 1, step 7, 8, 9, 15, 19
V12862	2	2	Washer	Section 1, step 34, 35
88725	4	4	Cap screw	Section 1, step 28, 30
374890	34	34	Cap screw M20 x 60	Section 1, step 7, 8, 19
9846950	8	8	Cap screw M20 x 90	Section 1, step 9
9847024	8	8	Nut M20	Section 1, step 12, 13
86516994	4	4	Washer	Section 1, 31
382101	N/A	12	Cap screw M20 x 80	Section 1, step 15
86599641	1	1	Installation instructions	

NOTE: If the 3PT Hitch Kit is being installed on a 9282 or 9184 model tractor, order additional tee fitting 86014503 (section 2, step 14).

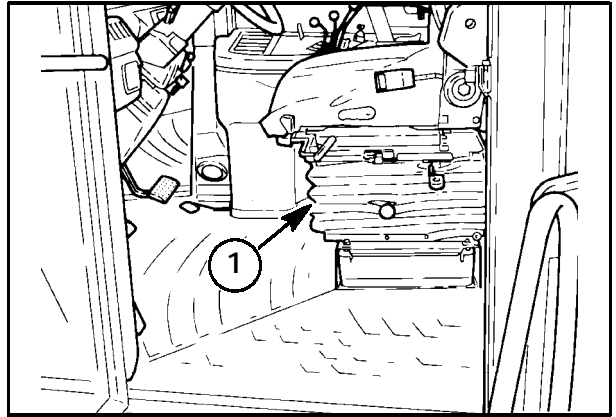
NOTE: If the 3PT Hitch Kit is being installed on an 80 series non Hi Flo tractor, order additional connector fitting 139398 (Section 2, step 15).

SPECIAL TOOLS

There are no special tools required to install the 3-Point Hitch on the Buhler Versatile 4WD tractors.

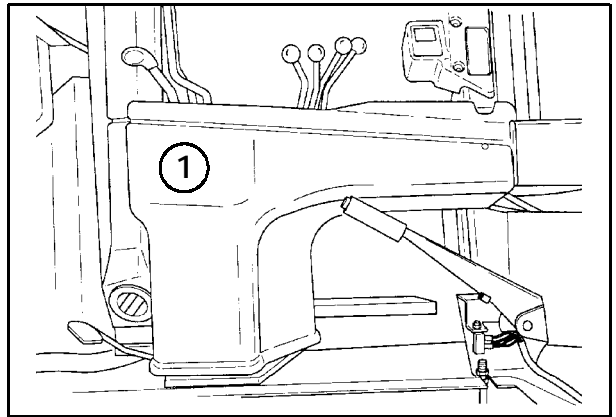
TRACTOR PREPARATION

1. Park the tractor on a clean level surface, set the parking brake and remove the keys from the ignition.
2. Install the articulation lock and chock the front wheels of the tractor.
3. Disconnect the battery cables as detailed in Section 3 - Electrical of the service manual.
4. Properly support the rear axle of the tractor and using a suitable lifting device remove the rear wheels. Retain the hardware for reinstallation.
5. Remove the seat, 1, from the cab as detailed in Section 11 - Cab of the Buhler Versatile 4WD service manual.



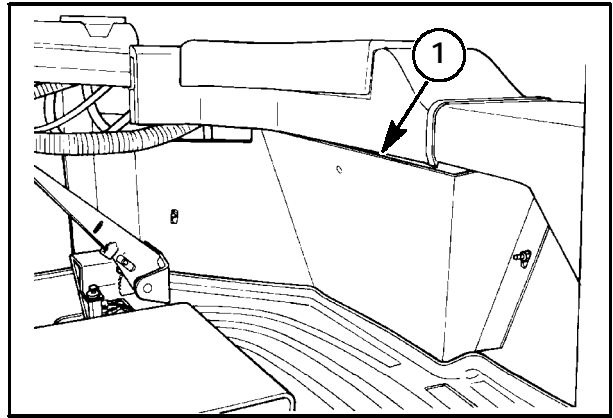
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6. Remove the right hand side console lower panel, 1, as detailed in Section 11 – Cab of the Buhler Versatile 4WD service manual.



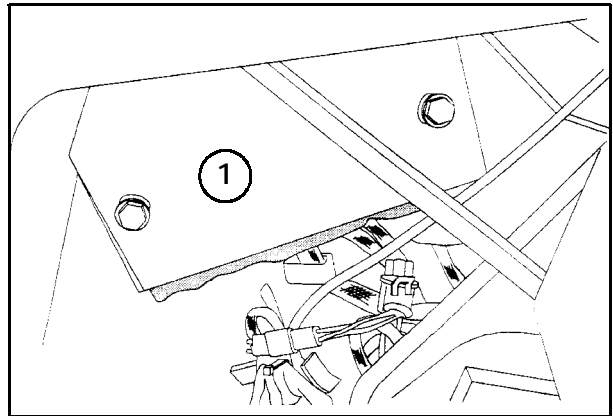
3

7. Remove the rear cab shield, 1, as detailed in Section 11 - Cab of the Buhler Versatile 4WD service manual.



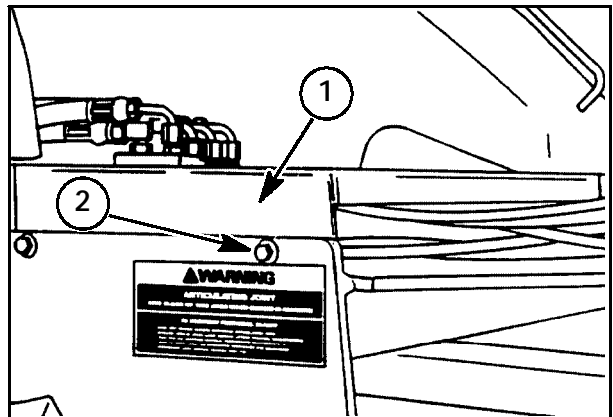
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8. Remove the rear access panel, 1, from the right rear corner of the cab as detailed in Section 11 - Cab of the Buhler Versatile 4WD service manual.



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9. Remove the shield, 1, for implement valve assembly by removing the four cap screws and nuts, 2. Retain the hardware for reassembly.

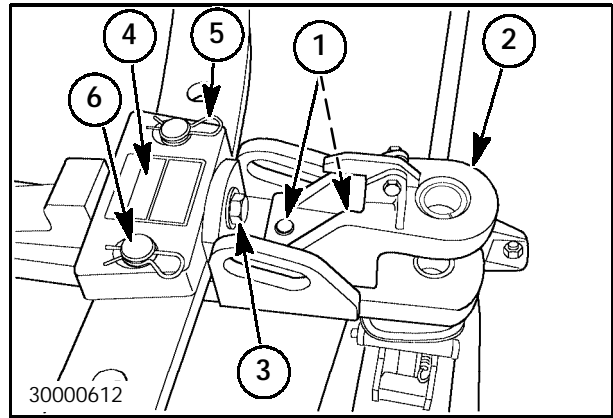


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SECTION 1

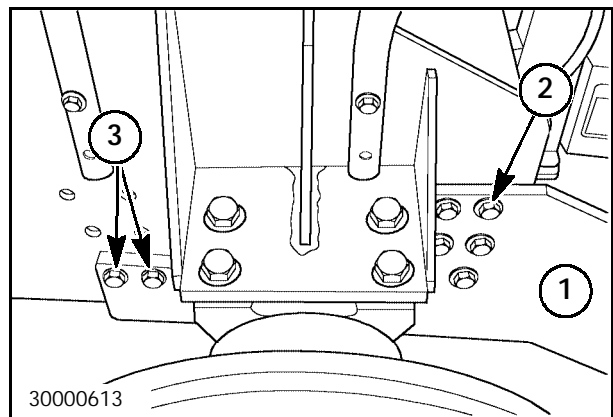
MECHANICAL COMPONENT INSTALLATION

1. Using a suitable jack, support the drawbar and remove the two cap screws and washers, 1, for the drawbar clevis, 2, and the cap screw and washer, 3, for the bridge plate, 4. Remove the two klik pins, 5, and the stanchion pins, 6, from the bridge plate. Remove the bridge plate and clevis from the drawbar. Allow the drawbar to hang downward off of the drawbar cage.



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2. Remove the tractor drawbar cage, 1, by removing five of the six rear bolts, 2, and the two front bolts, 3. Loosen the other rear bolt but do not remove it at this time.

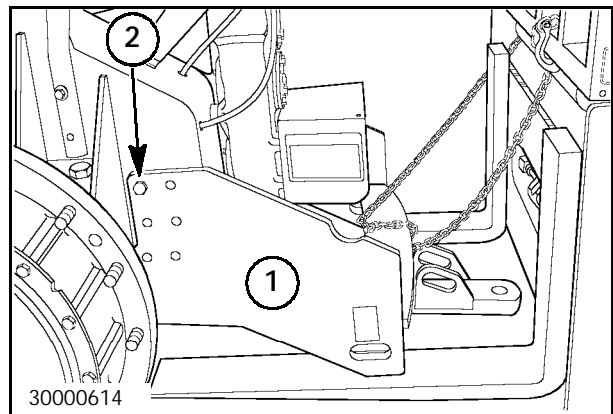


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3. Align a lifting device to the drawbar cage, 1, and remove the bolt, 2, loosened in Step 2. Allow the draw bar cage to rest on the lifting device and pull the cage away from the tractor.

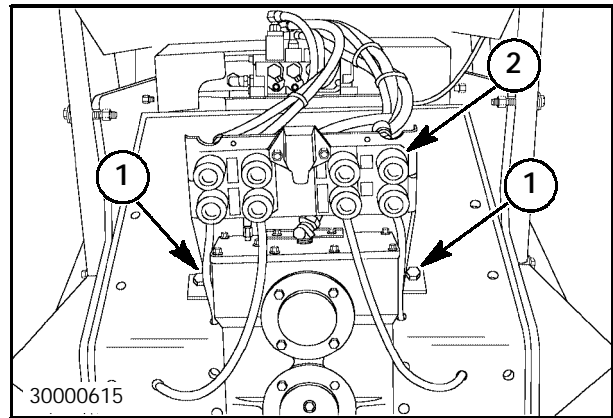
NOTE: The drawbar cage is a very tight fit to the tractor. Pull the cage straight back and away from the tractor.

The drawbar cage can be discarded at this time.



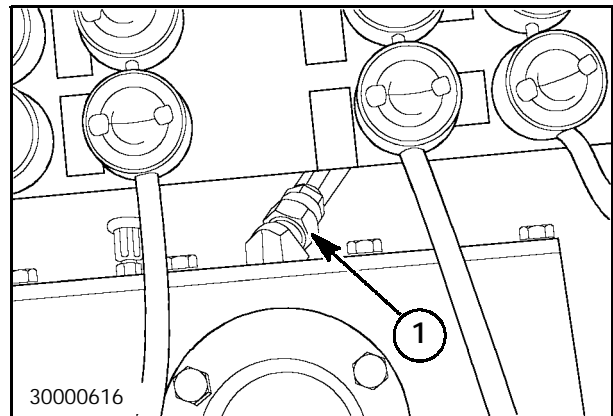
9

4. Remove the two cap screws and flange nuts, 1, for the hydraulic coupler bracket, 2. Discard the hardware at this time.



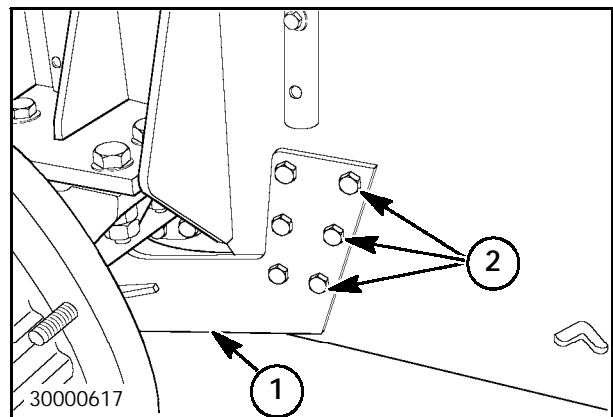
10

5. If the tractor is equipped with an optional PTO, disconnect the lube line, 1, from the PTO drop box. Cap the elbow fitting for the lube line.
6. Fold the hydraulic coupler support bracket and PTO lube line back and secure it to the implement valve.



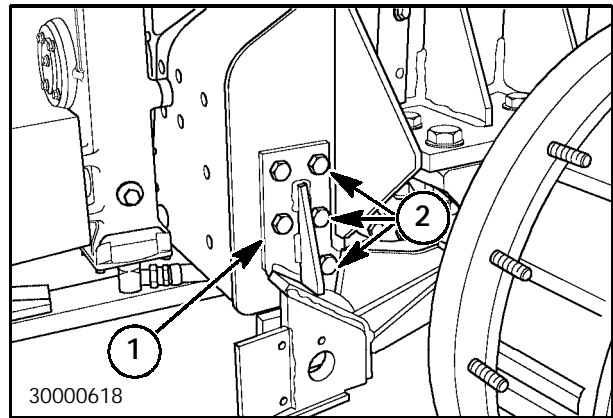
11

7. Using a proper lifting device, align the left and right hand side lower link brackets, 1, to the rear frame of the tractor. Secure the lower link brackets with six M20 x 60 cap screws and M20 serrated flange nuts, 2, in the front of the bracket. Torque the hardware to 576 N·m (425 ft. lbs.).



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8. Secure the rear of each lower link bracket, 1, with five M20 x 60 cap screws and M20 serrated flange nuts, 2. Torque the hardware to 576 N·m (425 ft. lbs.).



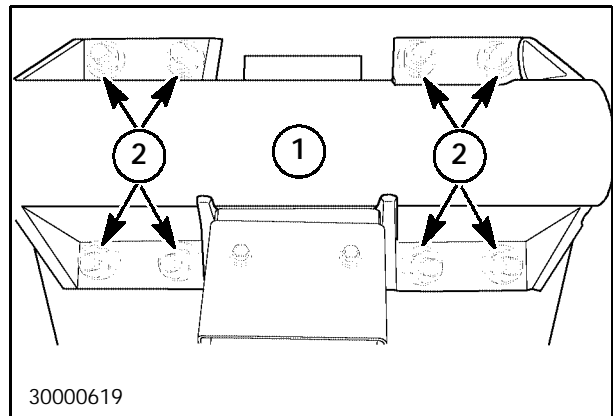
13

9. Using a proper lifting device align the rockshaft assembly, 1, to the rear frame of the tractor. Secure the rockshaft with eight M20 x 90 cap screws, M20 hardened washers and M20 flange nuts, 2.

NOTE: The rockshaft assembly weighs approximately 227 Kgs (500 lbs.). Use caution when installing the rockshaft to the rear frame of the tractor.

10. Insert the cap screws and hardened washers from the underside of the rear frame.

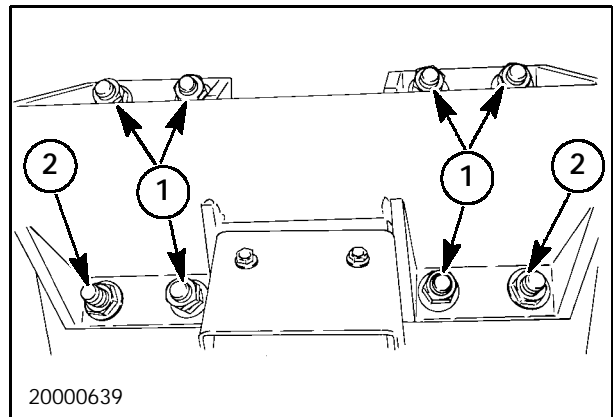
NOTE: The rockshaft is installed properly when the feedback potentiometer is on the right hand side of the tractor.



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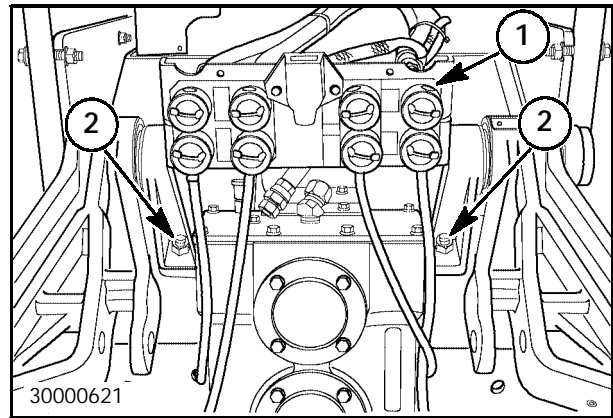
11. Torque the flange nuts to 576 N·m (425 ft. lbs.).

12. Install M20 jam nuts, 1, to six of the cap screws. Do not install jam nuts to the two lower outside cap screws, 2.



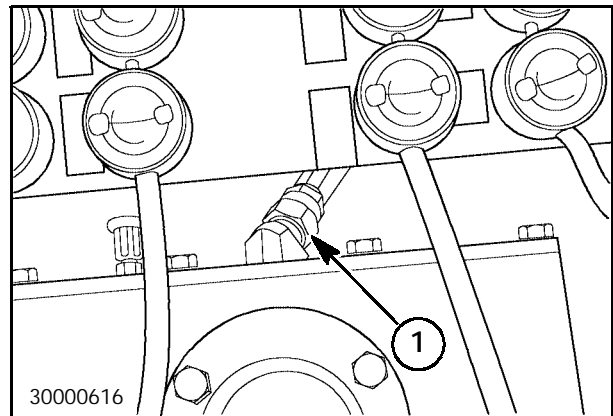
15

13. Install the hydraulic coupler bracket to the two lower outside cap screws and install the remaining two jam nuts, 2, on top of the coupler bracket. Torque all eight jam nuts to 576 N·m (425 ft. lbs.).



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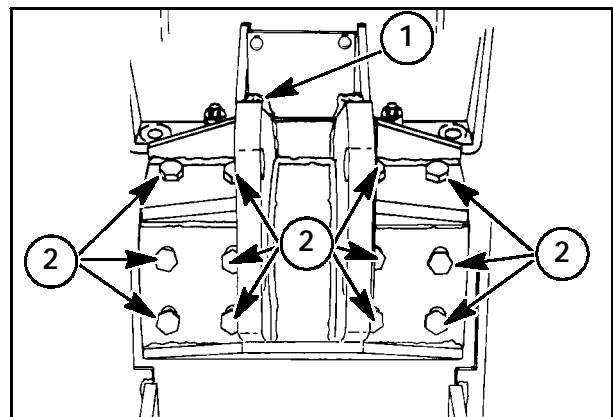
14. If the tractor is equipped with the optional PTO, remove the cap from the lube line and the elbow fitting and connect the lube line, 1, to the drop box elbow. Tighten the fitting securely.



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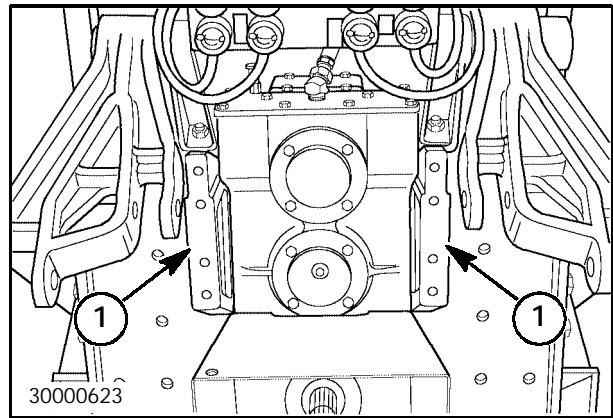
15. If the tractor is not equipped with the optional PTO, use an appropriate lifting device and install the upper link bracket, 1. Secure the bracket to the rear frame of the tractor with twelve M 20 x 80 cap screws, 2, and M20 flange nuts. Torque the hardware to 460 N·m (340 ft. lbs.).

For tractors not equipped with an optional PTO, skip step #15, 16, 17, and 18 and proceed to step #19.



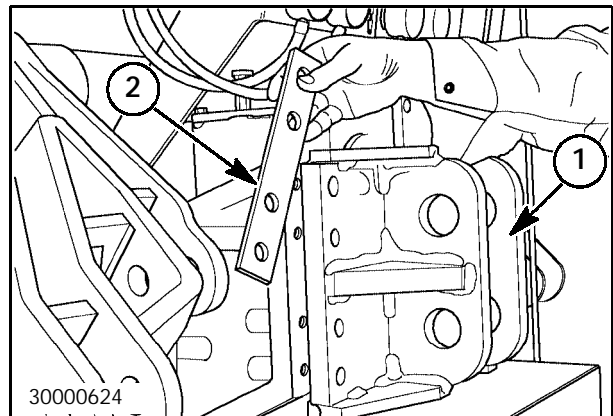
18

16. For tractors equipped with an optional PTO, install the upper link left and right hand side mounting brackets, 1, to the rear frame of the tractor with three 3/4 - 10 UNC x 2.0 cap screws and flat washers. The cap screws and washers are installed from the underside of the tractor. Torque the hardware to 460 N·m (340 ft. lbs.).



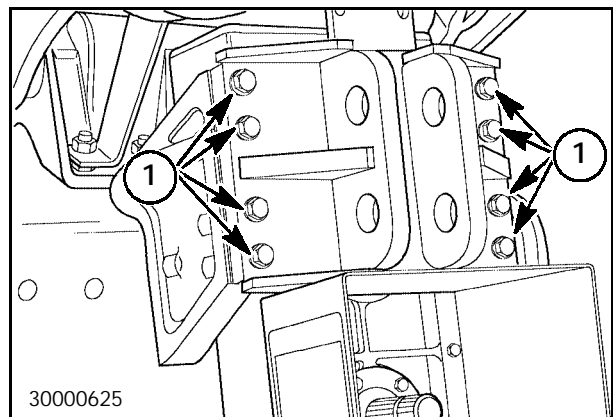
19

17. Align the upper link face bracket, 1, to the side mounting brackets and install a shim, 2, between the face and side mounting brackets.



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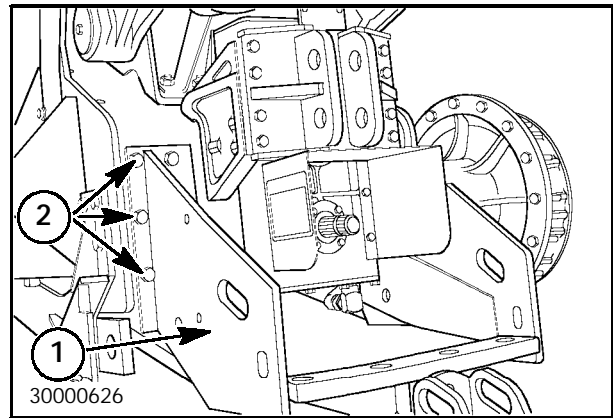
18. Install eight 5/8 - 11 UNC x 2.5 cap screws and flat washers, 1. Torque the hardware to 174 N·m (128 ft. lbs.).



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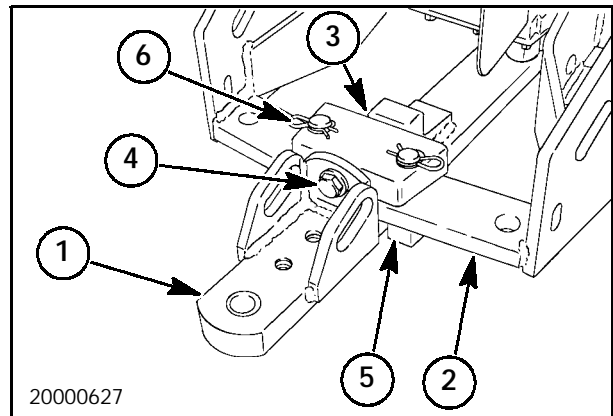
19. Using a proper lifting device, align the drawbar cage, 1, to the rear frame of the tractor and secure it with twelve M20 x 60 cap screws and M20 flange nuts, 2. When the cage is aligned properly, move the lifting device away from the tractor. Torque the hardware to 960 N·m (706 ft. lbs.).

NOTE: The drawbar cage weighs approximately 230 Kgs. (510 lbs.). Use caution when installing cage to the rear frame of the tractor.



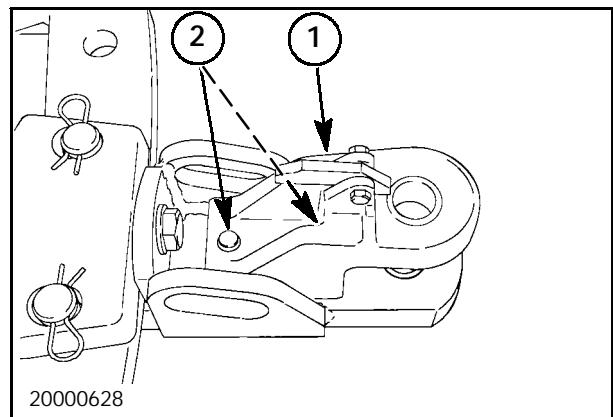
22

20. Using a floor jack align the drawbar, 1, to the cage, 2, and install the bridge plate, 3. Install the cap screw and washer, 4, to secure the bridge plate to the drawbar and torque it 960 N·m (706 ft. lbs.). Install the stanchion pins, 5, and install the klik pins, 6, to secure the drawbar.



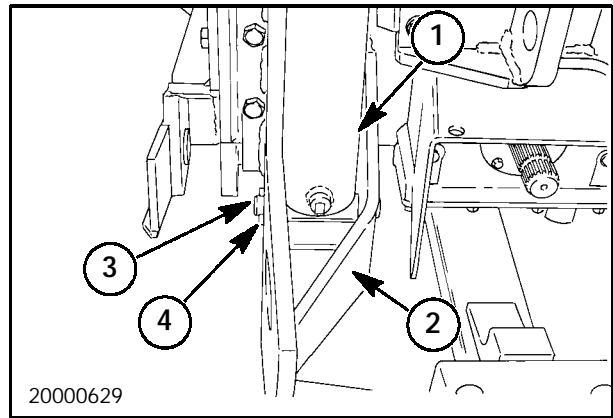
23

21. Install the drawbar clevis, 1, and secure with two cap screws and washers, 2. Torque the hardware to 960 N·m (706 ft. lbs.).



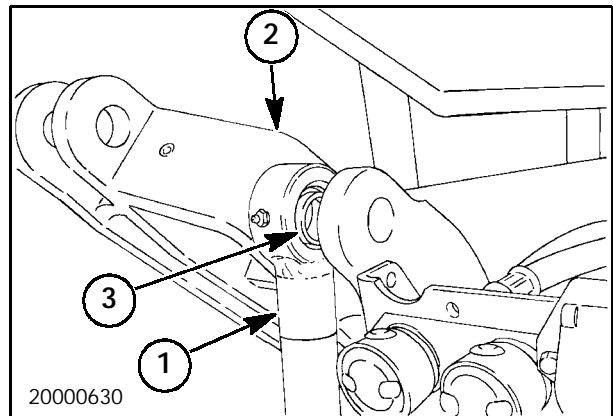
24

22. Install the barrel end of the left hand side lift cylinder, 1, into the bottom of the drawbar cage, 2. Make certain that the ports of the cylinder face rearward.
23. Secure the barrel end of the lift cylinder by installing a pin, 3, (55640) from the outside of the tractor to the inside of the drawbar cage. Secure the roll pin with two spring pins, 4, at either end.



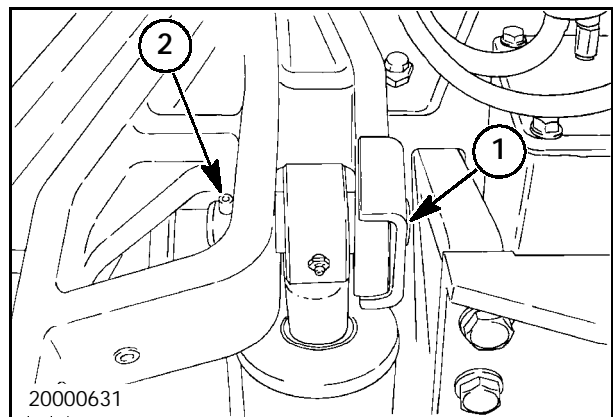
25

24. Attach the rod end of the cylinder, 1, to the lift arm, 2, using the headed pin and spacers. The spacers, 3, go on either side of the spherical bearing in the end of the cylinder rod.
25. Be certain that the grease zerk in the end of the rod is facing rear ward before the pin is installed. To install the pin it will be necessary to move the lift arm above the coupler bracket. Align the cylinder rod end with the hole in the lift arm and install a temporary pin. Be certain the shipping caps are remove from the lift cylinder and raise the lift arm and cylinder rod above the coupler bracket.



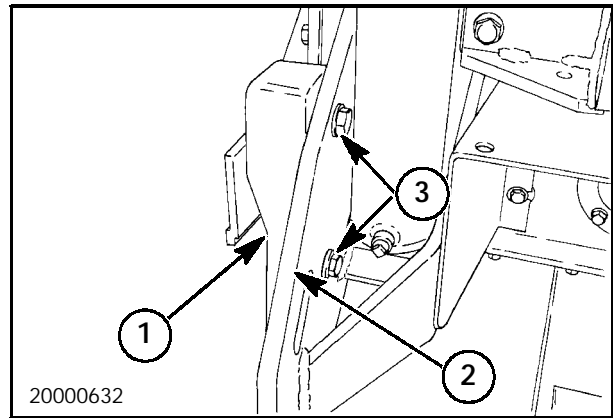
26

26. Tap the headed pin, 1, through the lift arm, spacer, cylinder, spacers and lift arm and secure the outside of the headed pin with a roll pin, 2.
27. Repeat steps 22 through 25 for the right hand side lift cylinder.



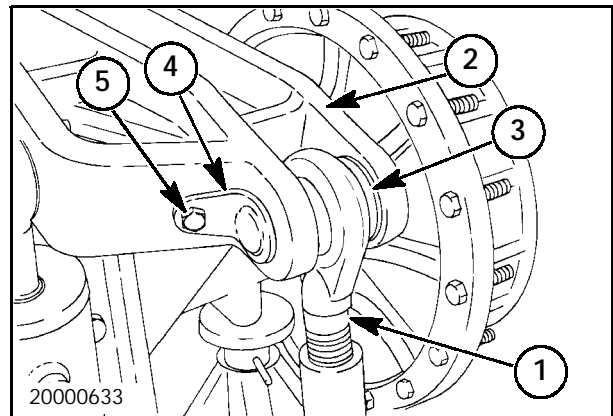
27

28. Install the left hand side sway block, 1, to the outside of the drawbar cage, 2. Secure the sway block with two 3/4 - 10 UNC x 1 3/4 cap screws and hardened flat washers, 3. Torque the hardware to 270 N·m (200 ft. lbs.).
29. For additional information on the sway block positioning, refer to the appropriate tractor Operator's Manual.
30. Repeat step 28 for the right hand side sway block.



28

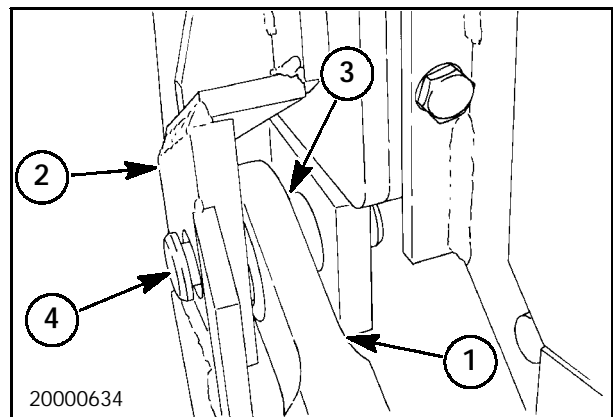
31. Align the right hand side lift link, 1, to the rockshaft arm, 2, and align two spacers, 3, between the lift arm and the rod end of the link. Secure the lift link with the upper lift link pin, 4. The pin must be installed from the inside of the rockshaft arm outward. Secure the pin with an M10 x 25 shoulder bolt, 5. Torque the hardware to 54 N·m (40 ft. lbs.).



29

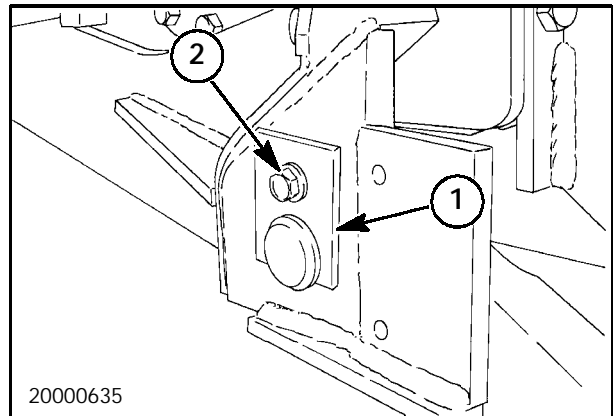
32. Install the lower link, 1, to the drawbar cage, 2, with a spacer, 3, to the inside of the lower link. Install the lower lift link pin, 4, through the lift link, spacer and drawbar cage.

NOTE: The lower link weighs approximately 50 Kgs (110 lbs.). Use caution when installing onto the tractor.



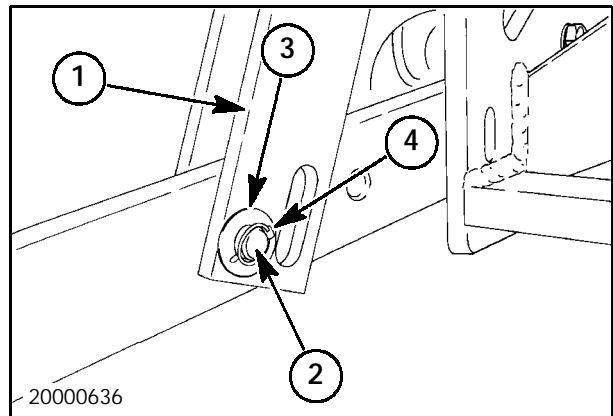
30

33. When the lower link and pin is aligned properly, secure it to the lower link bracket with a plate, 1, and a 1/2 -13 UNC x 1.00 flange screw, 2. Tighten the hardware securely.



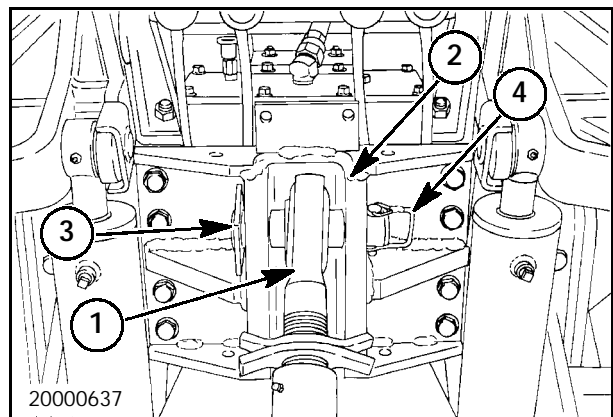
31

34. Attach the lower end of the lift link, 1, to the lower link by installing a pin, 2. Install a washer, 3, on the inside of the pin and secure it with a klik pin, 4. Make certain that the float slot in the link faces the front of the tractor and the pin is positioned in the rear hole of the lower link.
35. Repeat steps 31 through 34 for the left hand side lift link and lower link.



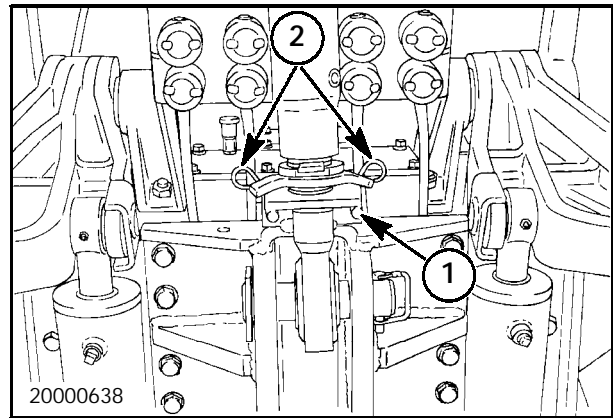
32

36. Install the upper link, 1, to the bracket, 2, with the narrow end of the upper link going through the upper hole in the mounting bracket. Secure the upper link with a pin, 3, and snapper pin, 4.



33

37. Place the upper link in the storage position and secure it with the upper link storage bracket, 1, and two cotter pins, 2.

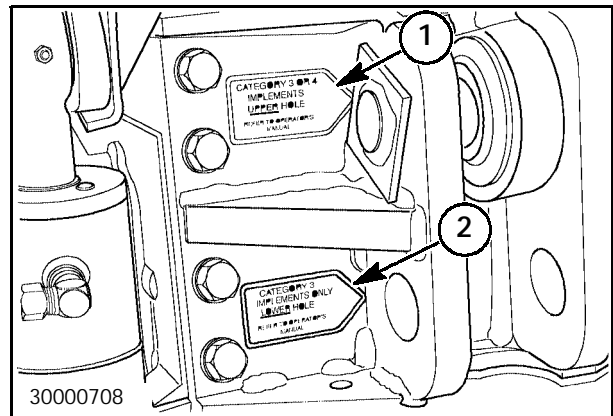


34

38. Clean the surface where the safety decals will be placed with a non-residue cleaner.

39. Install the Category 3 or 4 decal, 1, to the top section of the top link bracket.

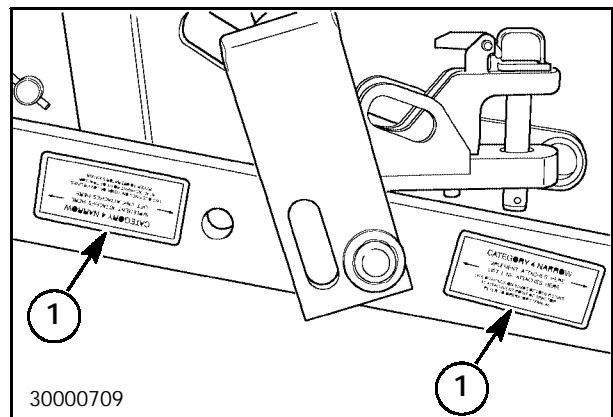
Install the Category 3 decal, 2, below the Category 3 or 4 decal on the top link bracket.



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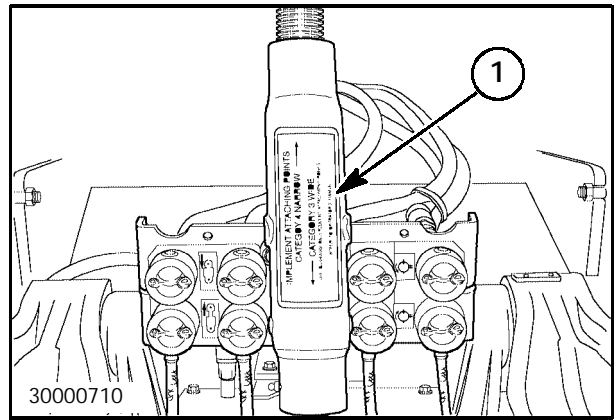
40. Install the decals to the lower links with the Category 4 decal towards the rear of the link and the Category 3 to the front of the link, upside down.

41. Repeat step 40 on the opposite side lift link.



36

42. Install the top link decal as shown.



37

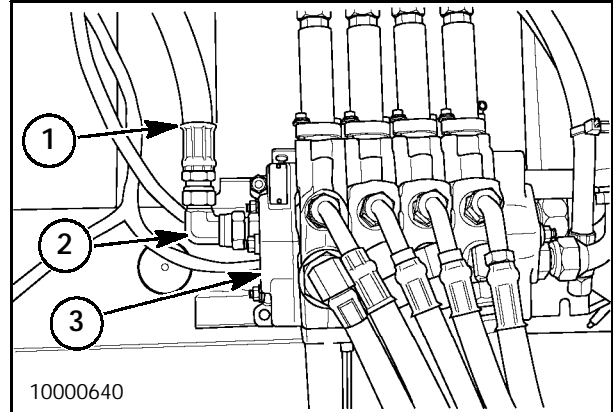
SECTION 2

HYDRAULIC COMPONENT INSTALLATION

NOTE: 80 Series non HydraFlow tractors do not have a supplemental supply line on the outlet end cap. Skip steps #1, #2 and #3 and proceed to step #4.

1. Disconnect the implement valve supply line, 1, from the elbow fitting, 2, on the left hand side of the implement valve stack (outlet end), 3.

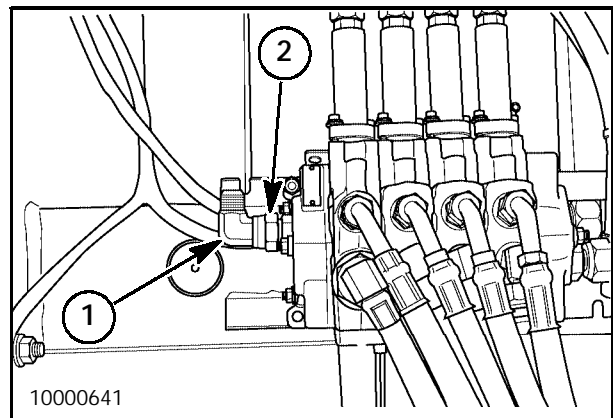
NOTE: Have a drain pan available to catch any excess fluid in the supply line.



38

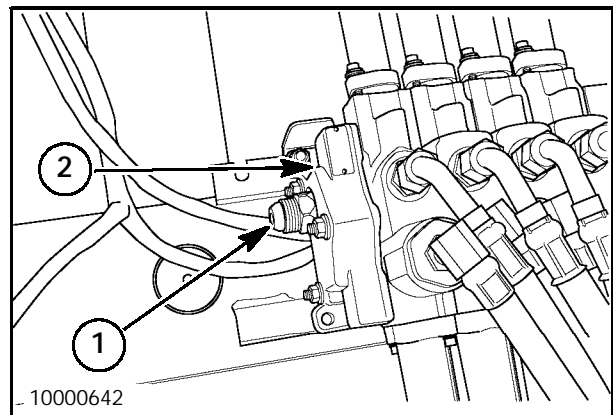
2. Remove the elbow fitting, 1, from the check valve, 2, and discard it at this time.

NOTE: On 9282, 9184 and 2240 tractors the elbow is screwed into the end cap and the check valve is screwed into the elbow. Remove both fittings as detailed in step #2 and #3.



39

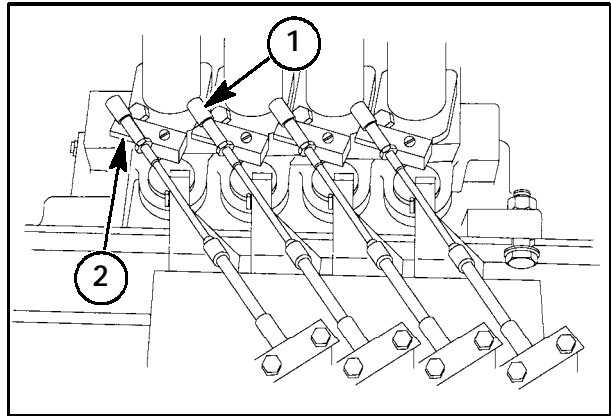
3. Remove the check valve, 1, from the implement valve end cap, 2. Retain the check valve.



40

4. On the front of the implement valve assembly unsnap the flow control cables, 1, from the bellcrank, 2.

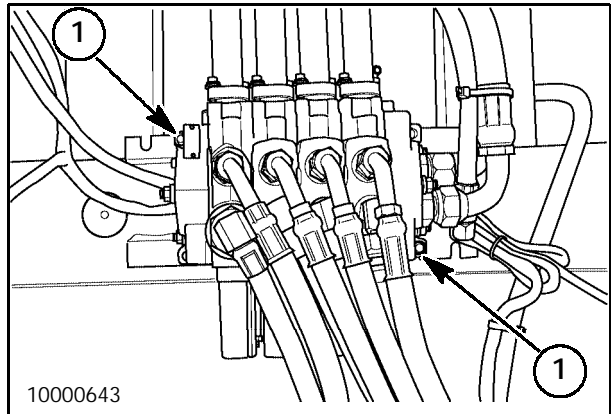
NOTE: 80 series tractors will have one flow control cable standard. 82 series tractors can have one flow control cable or an optional four flow control cables. 84/2000 Series tractors have four flow control cables as standard equipment as shown.



41

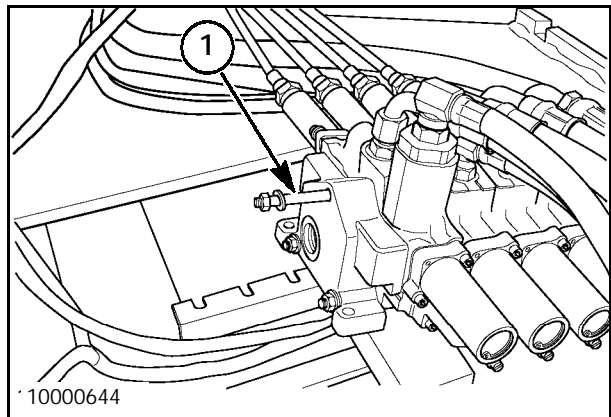
5. Remove the implement valve from the rear frame of the tractor by removing the two cap screws and lock nuts, 1. Retain the hardware for reinstallation. Tilt the valve stack up to the right and place a block of wood under the valve assembly.

NOTE: Note the bolt hole location where the implement valve assembly was mounted to the rear frame. There are three possible locations depending on the series of tractors and number of flow control cables.



42

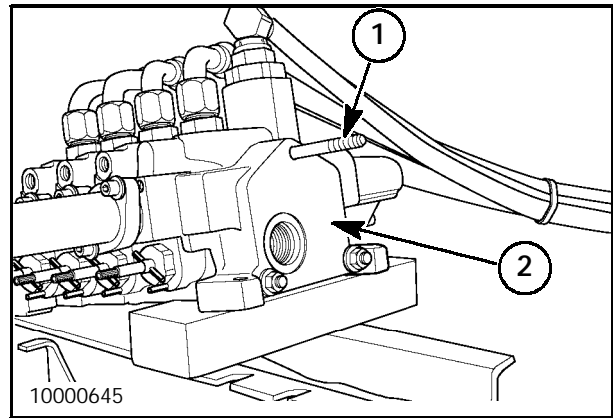
6. From the right hand side (inlet end) of the implement valve remove the nut and lock washer from the top center through bolt.
7. Gently pull the top through bolt, 1, out of the valve stack towards the left (outlet) side of the tractor.



43

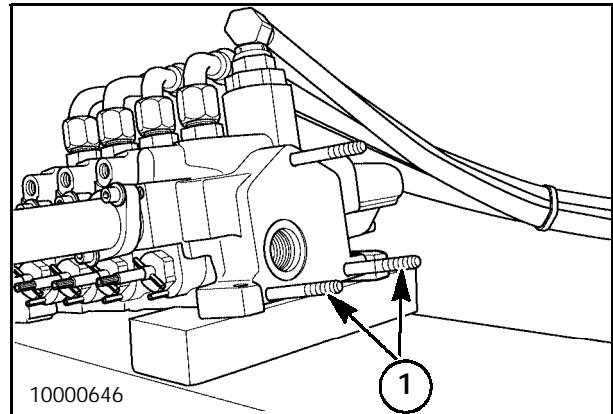
8. Install the new through bolt, 1, to the valve stack, 2, by pushing the bolt through the valve assembly from left to right. Install a new lock washer and nut on the right hand side of the through bolt.

NOTE: By removing one through bolt at a time the valve seals will not be disturbed and will not have to be replaced. If you cannot remove each through bolt one at a time, the valve assembly must be separated and new seals must be installed. A seal kit is included with the three-point hitch kit.



44

9. Repeat steps 6 through 8 for each of the two remaining through bolts, 1.

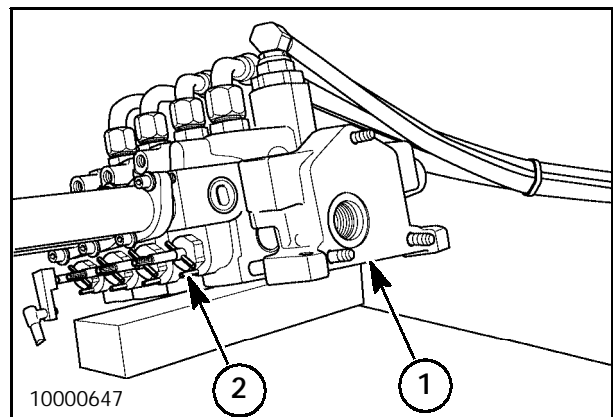


45

10. Remove the outlet end cap, 1, from the implement valve assembly, 2.

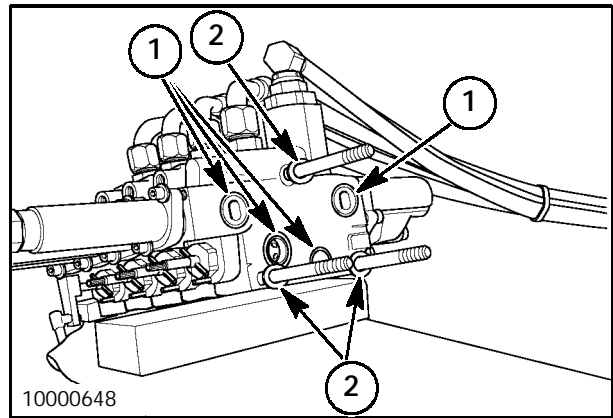
If the tractor being work on is an 80 Series tractor with a non HydraFlow hydraulic system(end cap is not ported) discard the end cap.

If the tractor being work on is an 80 Series HydraFlow, 82 Series, 84 Series or 2000 Series tractor, retain the end cap for installation later in this procedure.



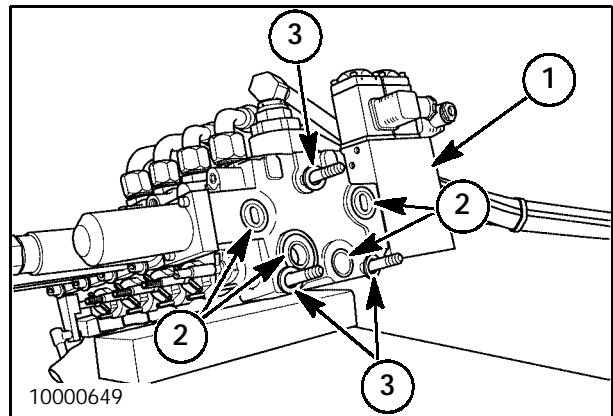
46

11. Replace the four o-rings, 1, and three shims, 2, located on the blue valve section. Make certain that the new o-rings are properly seated in the grooves.



47

12. Install the three-point hitch valve slice, 1, onto the through bolts. Install new o-rings, 2, and shims, 3, to the outside of the three-point hitch valve slice. Make certain that the o-rings are seated properly in the grooves.

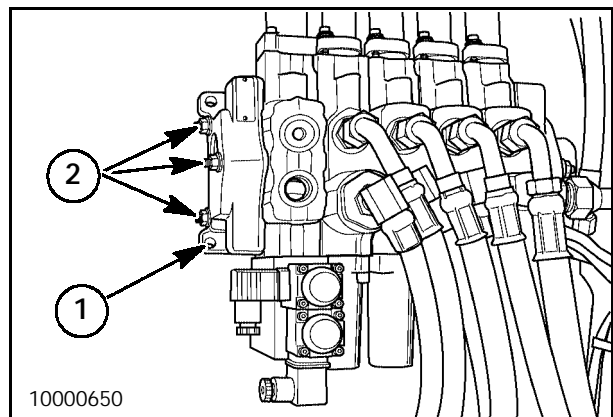


48

13. Install the end cap, 1, onto the implement valve assembly. Install a lock washer and nut on each through bolt, 2. Torque the hardware to 29 N·m (22 ft. lbs.).

NOTE: If the tractor being worked on is an 80 Series non HydraFlow tractor install the end cap that is contained in this kit. If the tractor being worked on is an 80 series HydraFlow, 82 Series, 84 series or 2000 Series the end cap contained in the kit will not be used. Reinstall the original end cap removed in step #10.

IMPORTANT: Torque the nuts to a maximum of 29 N·m (22 ft. lbs.). Do not over tighten the nuts as this will cause the valve spools to bind.



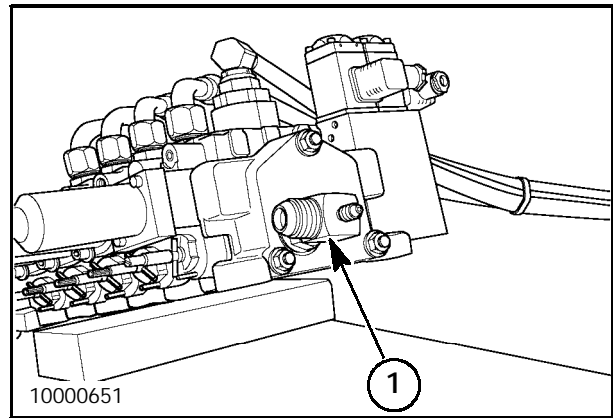
49

14. On 80 Series with HydraFlow, 82, 84 and 2000 Series tractors, install the elbow fitting, 1, into the outlet end cap and tighten securely. When orientated properly, the open end of the elbow will face the engine.

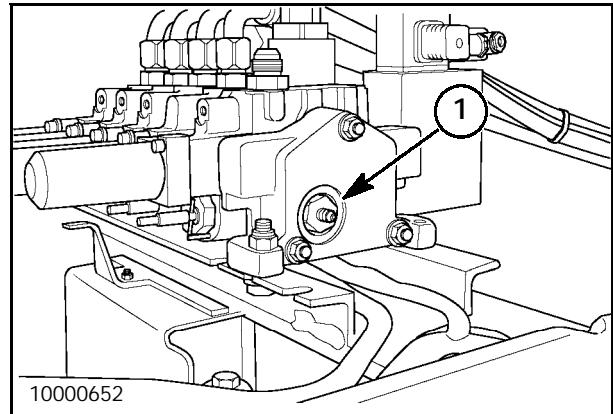
NOTE: The elbow fitting that comes in the 3PT Hitch Kit is part #V70253. This elbow fits all 80/82/84/2000 series models EXCEPT 9282, 9184 and 2240 tractors. If the tractor being worked in is a 9282, 9184 or 2240, elbow part #86014503 must be ordered and installed.

NOTE: If the tractor being worked on is an 80 series Non-HydraFlow tractor, elbow V70253 and/or 86014503 are not used. Straight fitting 139398 must be ordered and installed in place of the elbow. 139398 is not included in the kit.

15. On 80 Series tractors without HydraFlow install the straight fitting, 1, into the end cap and tighten securely.



50

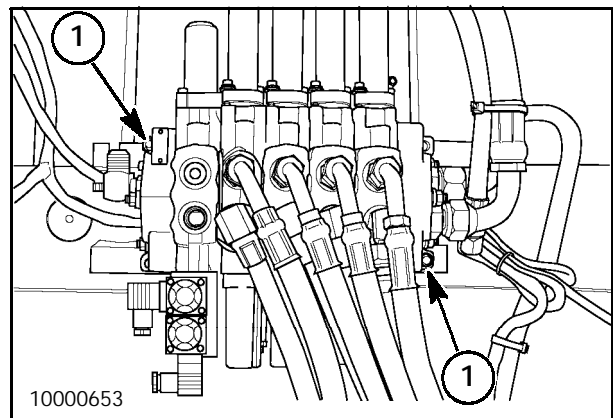


51

16. Remove the wood block from under the valve assembly and reposition the valve stack properly. When aligned, install the cap screws and lock nuts, 1, which were removed in step 5 of this procedure. Tighten the hardware securely.

NOTE: Be certain to reposition the implement valve assembly on the rear frame as identified in step 5 of this procedure. The right hand side cap screw will remain in the same position. The left hand side cap screw will move one position to the left because of the additional valve slice installed.

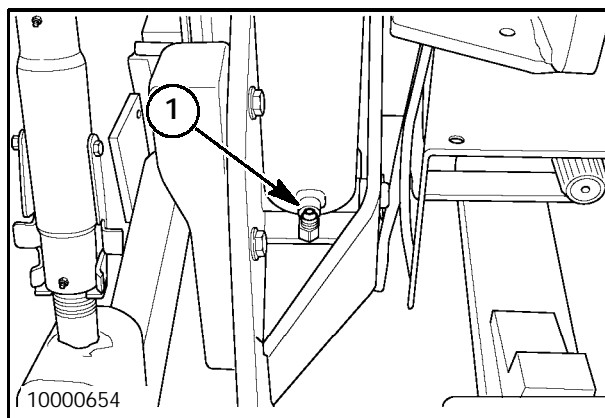
Make certain that the wiring harness is not pinched under the valve stack. Move it side to side to make certain it is free.



52

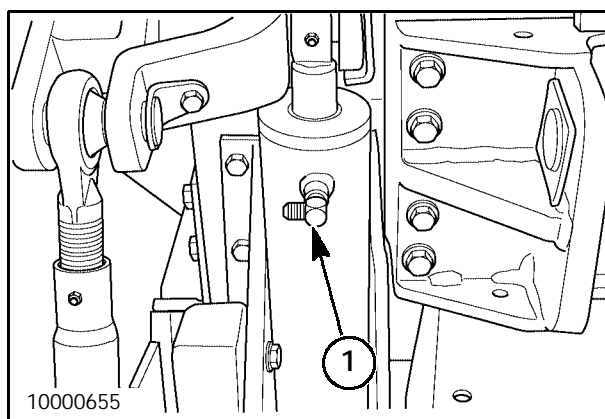
17. Reconnect the flow control cables to the bellcrank on the front of the valve sections.

18. Apply thread sealant to the bottom elbow for the left hand side lift cylinder. Install the elbow, 1, and tighten securely. When installed properly, the elbow will face upward.



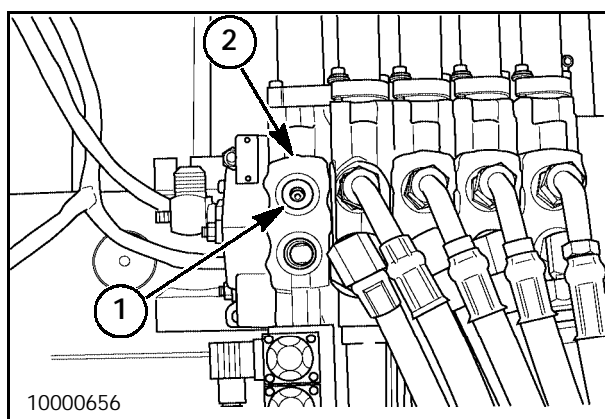
53

19. Apply thread sealant to the top elbow for the left hand side lift cylinder. Install the elbow, 1, and tighten securely. When installed properly, the elbow will face away from the tractor.
20. Repeat steps 18 and 19 for the right hand side lift cylinder.



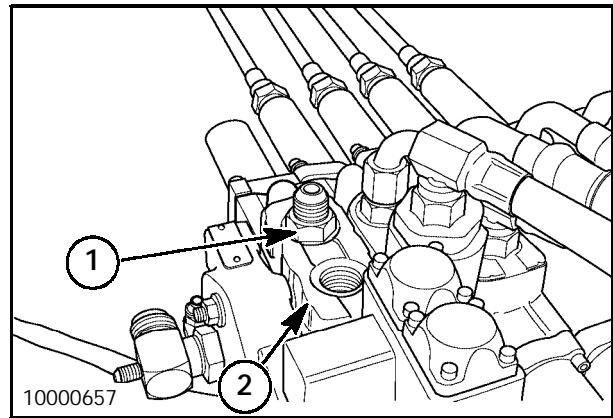
54

21. Using an allen wrench remove the plug, 1, from the front port of the three-point hitch control valve, 2. Discard the shipping plug at this time.



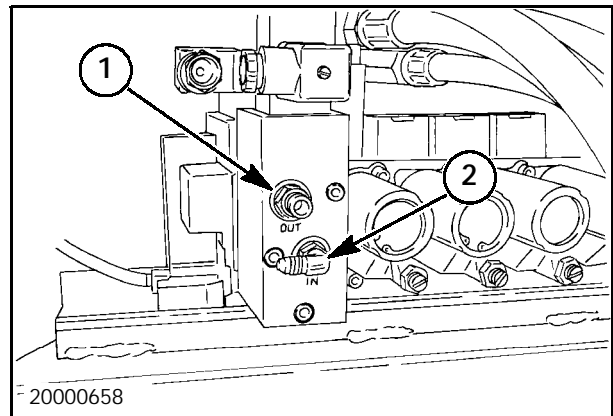
55

22. Install the ORB connector, 1, to the front port of the three-point hitch valve slice, 2. Tighten the fitting securely.



56

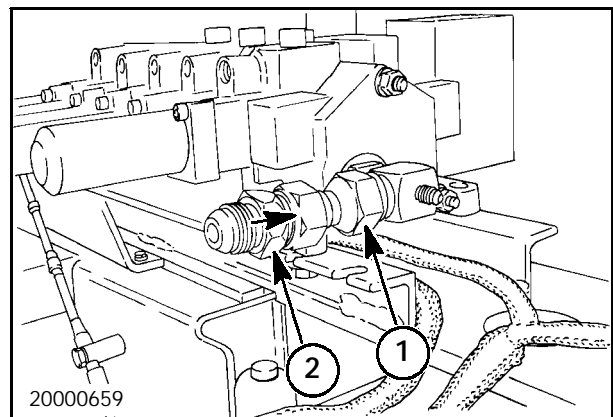
23. In the rear of the valve section install the straight threaded adapter, 1, into the upper port. This port is marked "OUT". Tighten the fitting securely.
24. Install the 90° elbow, 2, into the bottom port on the rear of the valve slice. This port is marked "IN". Tighten the fitting securely.



57

25. On all 80 series HydraFlow equipped, 9482, 9682, 9882, 9384, 9484, 9684, 9884, 2270, 2310, 2360, and 2425 tractors, install the connector fitting, 1, and check valve, 2, (removed in step 3 of this procedure). There is an o-ring on the check valve that can be cut off and discarded. The check valve is a multi purpose fitting (ORB and JIC) and the o-ring is not used to seal this connection.

Be certain that the check valve is orientated so that the flow arrow on the check valve points toward the implement valve.



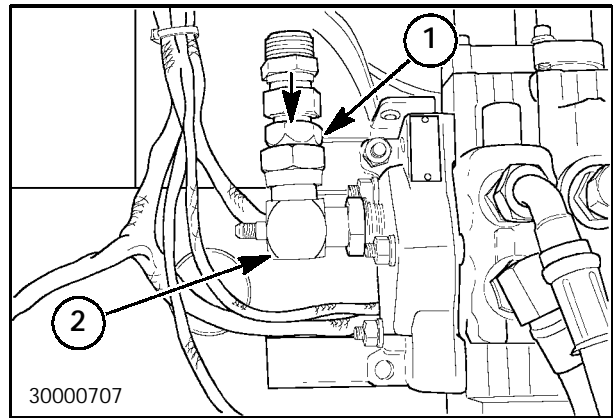
58

On 9282, 9184 and 2240 tractors install the check valve, 1, (which was removed in step 3 of this procedure) into the open port of the elbow, 2, that is screwed in to the outlet end cap. There is an o-ring on the check valve that can be cut off and discarded. The check valve is a multi purpose fitting (ORB and JIC) and the o-ring is not used to seal this connection.

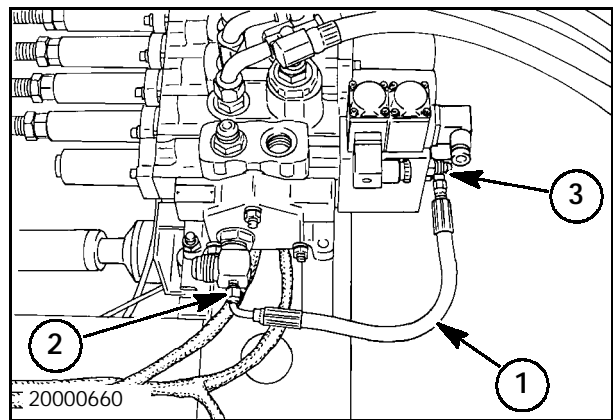
Be certain that the check valve is orientated so that the flow arrow on the check valve points toward the implement valve.

NOTE: On 80 Series non HydraFlow tractors do not have an elbow installed in this location. The male adapter fitting (installed in step #15) is the only fitting in the end cap.

26. On 80 Series HydraFlow, 82, 84 and 2000 Series tractors, install the solenoid valve jumper hose, 1, to the small adapter fitting, 2, on the outlet end cap elbow. Connect the other end of the hose to the elbow fitting, 3, installed in the "IN" port of the three point hitch valve solenoid block. Tighten the fittings securely.

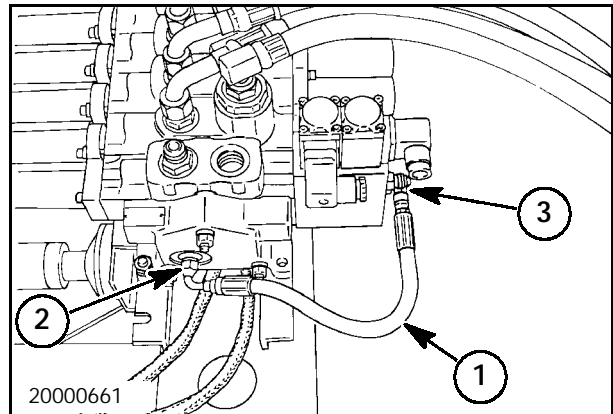


59



60

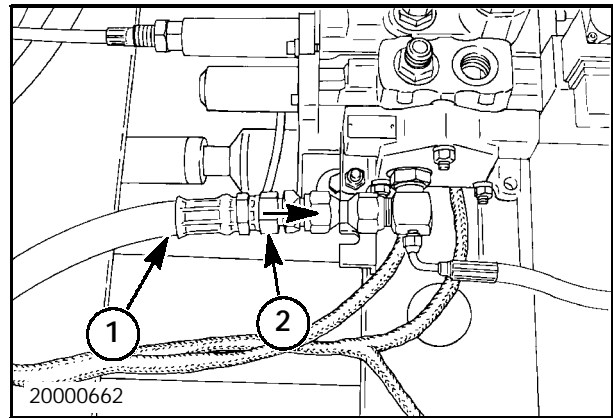
On 80 Series non HydraFlow install the solenoid valve jumper hose, 1, to the small adapter fitting, 2, on the outlet end cap. Connect the other end of the hose to the elbow, 3, fitting installed in the "IN" port of the three point hitch valve solenoid block. Tighten the fittings securely.



61

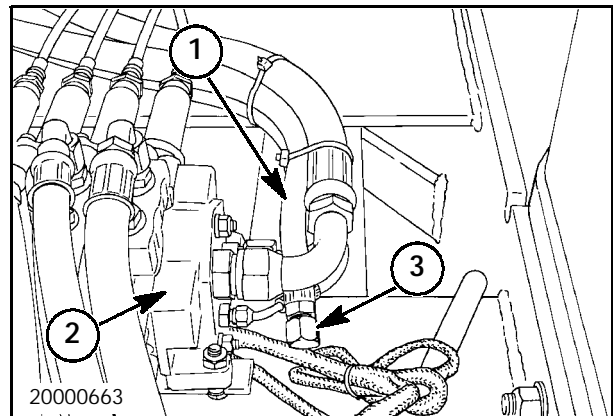
27. On 80 series HydraFlow, 82 Series, 84 Series and 2000 Series install the supply line, 1, to the check valve, 2, on the outlet end cap of the implement valve.

NOTE: 80 Series non HydraFlow tractors do not have a supply line on this side of the implement valve.



62

28. Locate the zero return line, 1, on the inlet side of the implement valve, 2. Cut the tie strap securing the line and remove and discard the cap, 3.

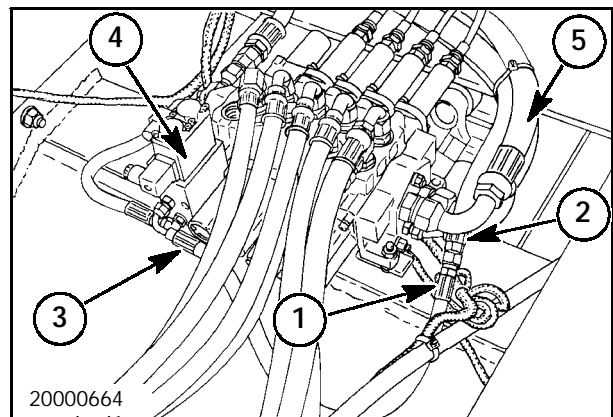


63

29. Install the straight fitting end of the jumper hose, 1, to the zero return line, 2. Route the hose to the rear of the valve stack and connect the elbow end, 3, of the jumper hose to the straight adapter in the rear of the three-point hitch valve block, 4. This port is marked "OUT". Tighten the fittings securely.

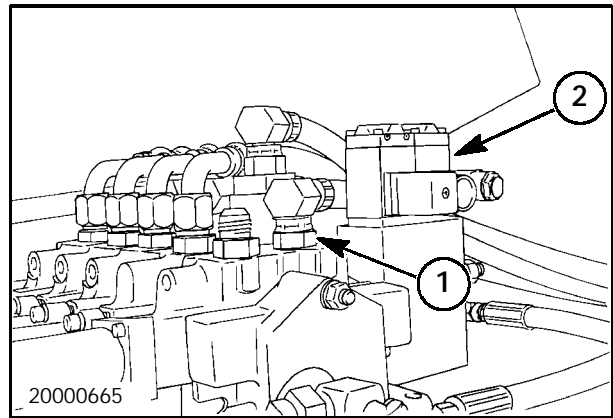
Make sure that the zero return line and jumper hose are routed under the implement valve return line, 5, as shown. If it is not routed this way, the implement valve shield will not fit.

NOTE: The tractor being worked on may have a hydraulic option installed on it that is currently occupying the zero return line. Procure fittings locally that will allow the solenoid drain line to attach to the zero return line circuit.



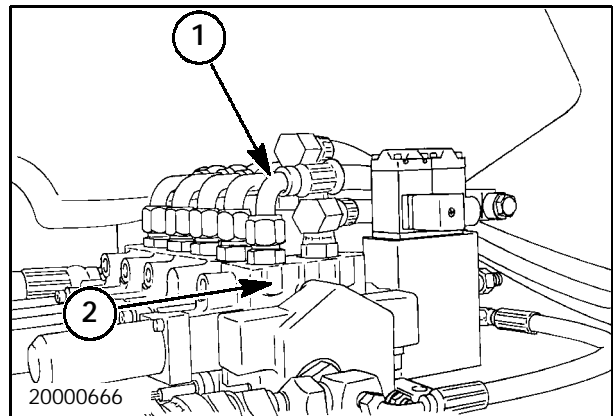
64

30. Install the cylinder supply hose, 1, to the rear port of the three point hitch valve slice, 2. The hose has a 90° swivel end on it. Route the hose to the inside of the raise and lower solenoids. Tighten the fitting securely.



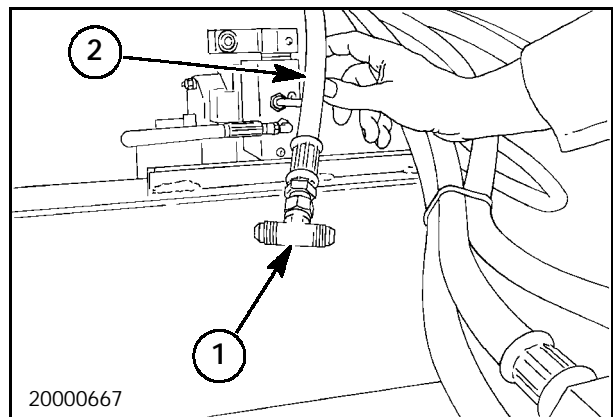
65

31. Install the front cylinder supply hose, 1, to the adapter in the front port of the three point hitch valve slice, 2. Route the hose on top of the other cylinder supply hose and tighten the fitting securely.



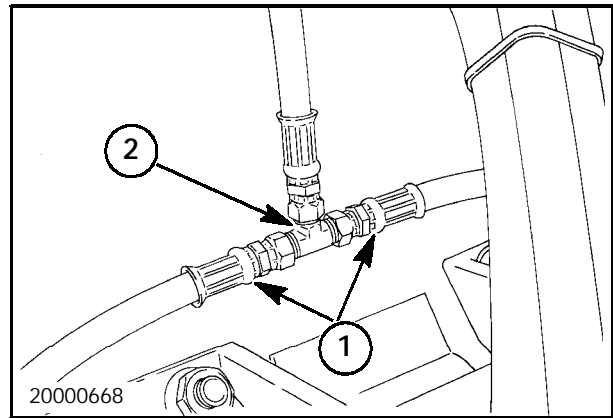
66

32. Install the union tee, 1, to the front cylinder supply hose, 2, and tighten the tee securely.



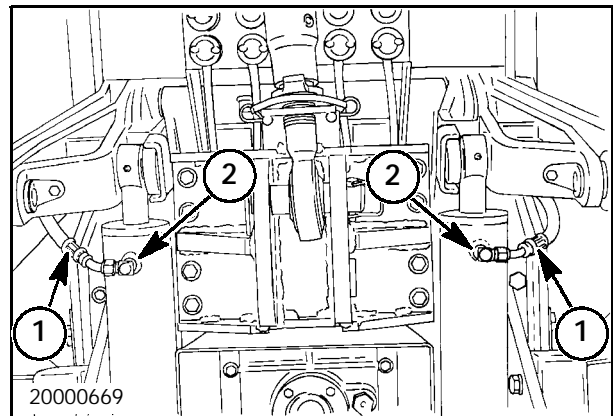
67

33. Install both top cylinder supply hoses, 1, to the tee fitting, 2.



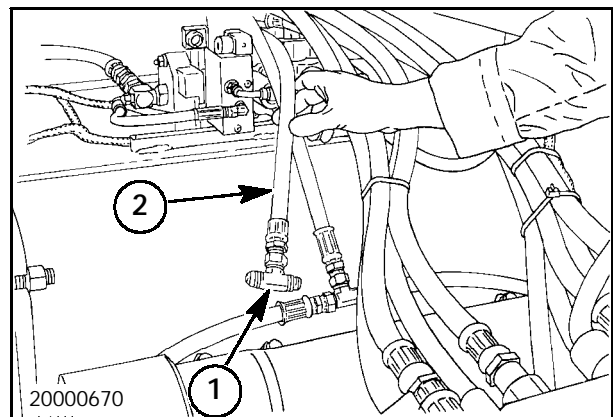
68

34. Route the cylinder supply hoses, 1, under and around the ends of the rockshaft and to the top of the lift cylinders. Install the 45° angle connector to the elbows on top of the lift cylinders, 2. Tighten all fittings securely.



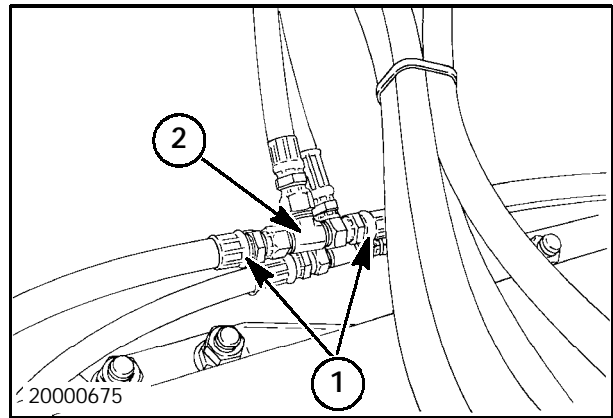
69

35. Install the union tee, 1, to the rear cylinder supply hose, 2, and tighten the fitting securely.



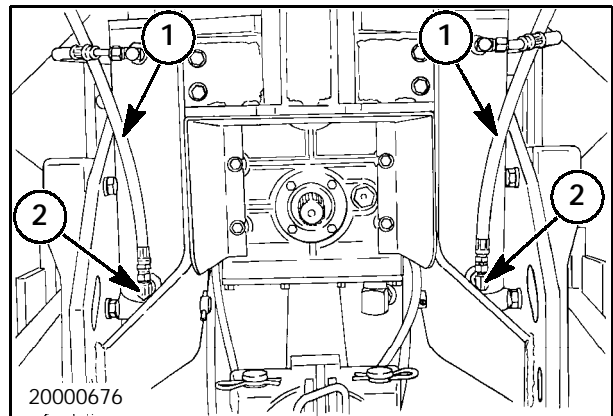
70

36. Install the cylinder supply hoses, 1, to the tee fitting, 2, and route the hoses under and around the ends of the rockshaft.



71

37. Connect the hoses, 1, to the lower connectors, 2, on the lift cylinders. Tighten all fittings securely.

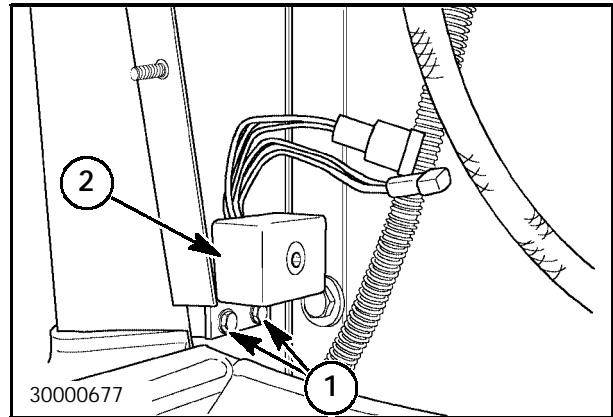


72

SECTION 3

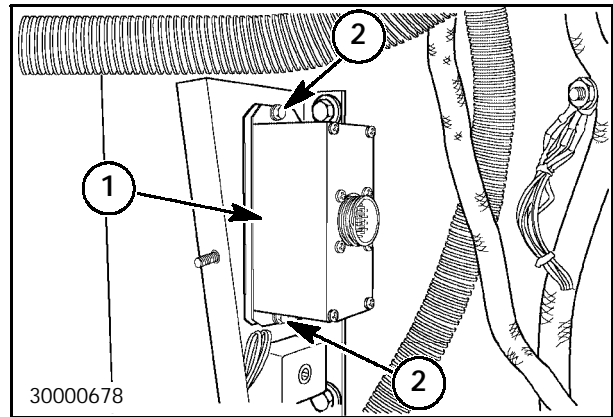
ELECTRICAL COMPONENT INSTALLATION

1. Using two M6 x 12 cap screws, 1, install the lowering rate controller, 2, to the existing three-point hitch bracket in the right corner of the cab. This bracket is resident in all 80/82/84/2000 Series tractors. Tighten the hardware securely.



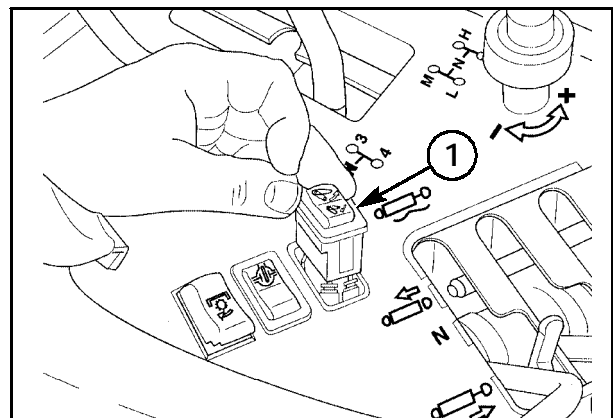
73

2. Install the three-point hitch controller, 1, to the bracket by using two M6 x 12 cap screws, 2. The three-point hitch controller is symmetrical and is installed above the lowering rate controller.



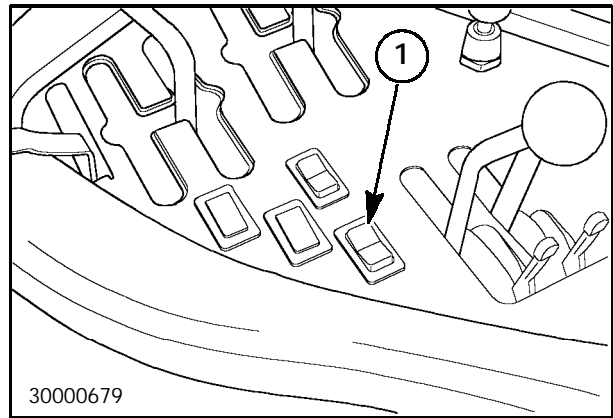
74

3. On 80/82 Series tractors install the three-point hitch automatic switch, 1, to the outside cutout on top of the right hand side console.



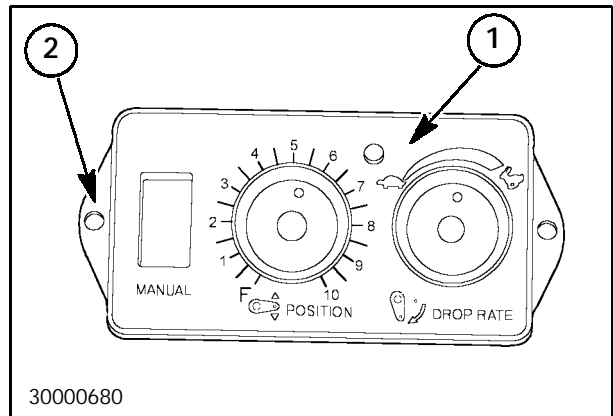
75

On 84/2000 Series tractors install the three point hitch automatic switch, 1, to the right hand side console outside rear cutout.



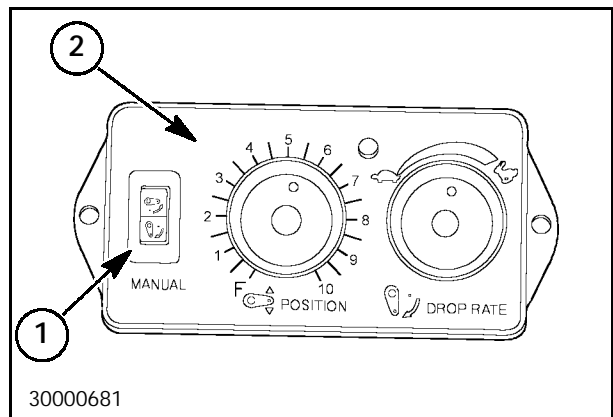
76

4. Install the three point hitch decal, 1, to the face plate, 2.



77

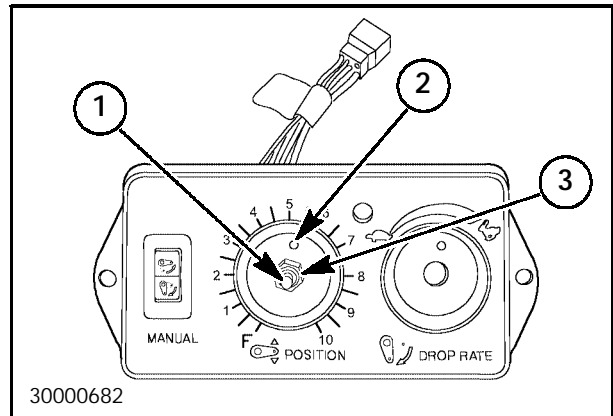
5. Install the manual switch, 1, to the cutout in the face plate, 2. The raise and lower arrows must face towards the middle of the face plate.



78

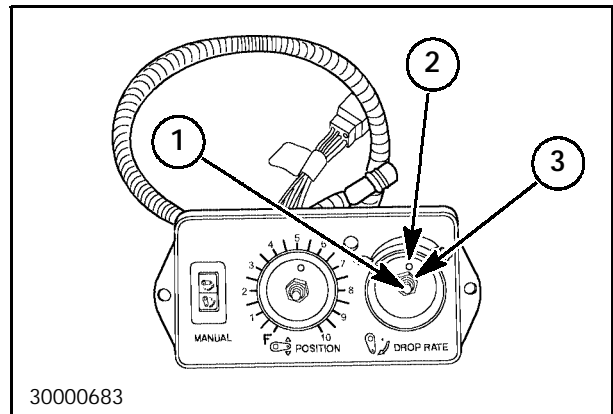
6. Remove the nuts and star washer from the stem of the command potentiometer (five wire) and install the stem, 1, through the face plate. Make certain the locating tab, 2, is positioned properly. Install the star washer and one nut, 3, to the top of the command potentiometer.

NOTE: The command and lower rate potentiometers may come with two nuts on the stem. Only use one nut when installing the POTS to the face plate.



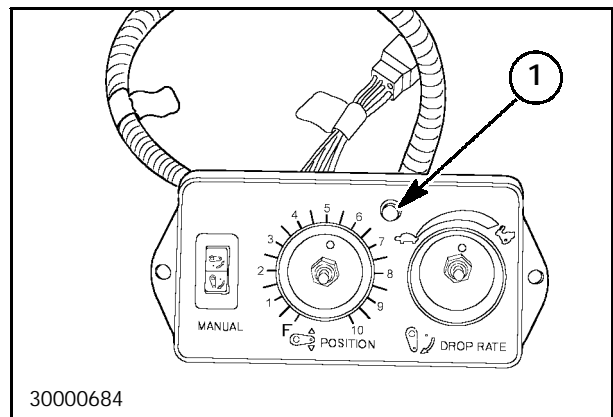
79

7. Remove the nuts and star washer from the stem of the lowering rate potentiometer (three wire) and install the stem, 1, through the face plate. Make certain that the locating tab, 2, is positioned properly. Install the star washer and one nut, 3, to the top of the lowering rate potentiometer.



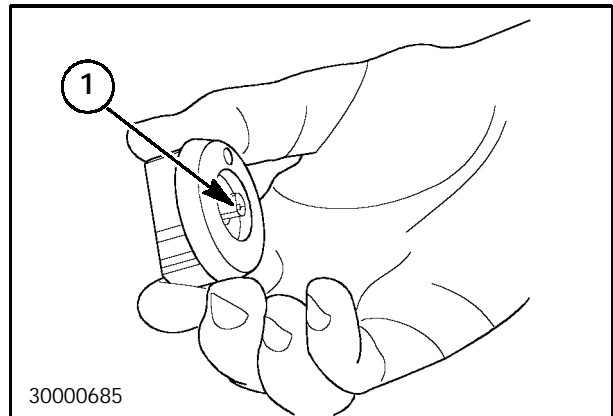
80

8. Install the auto indicator lamp, 1, into the face plate from the top side of the control panel.



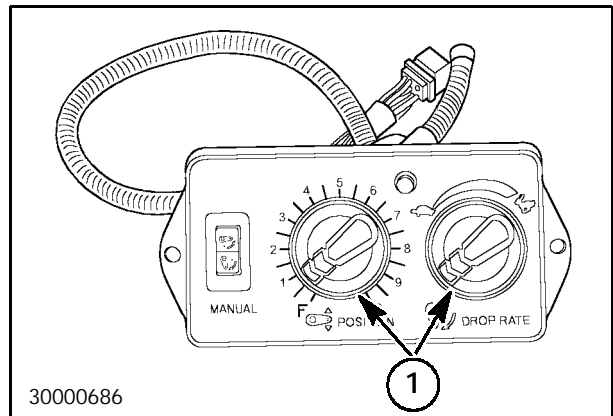
81

9. Install two spring retainers, 1, to each of the control knobs.



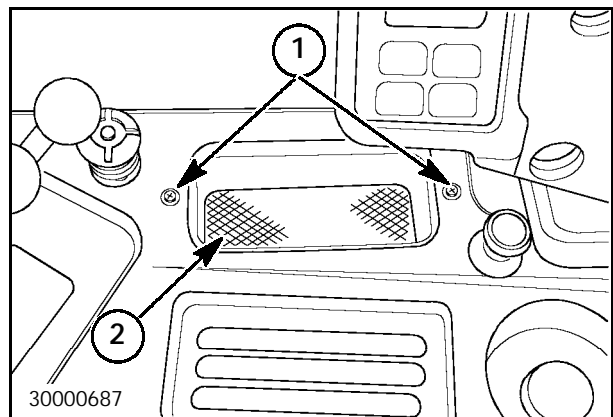
82

10. Align the control knobs, 1, to the top of the face plate and install the knobs with the D-shape of the knob to the D-shape of the potentiometer stems.



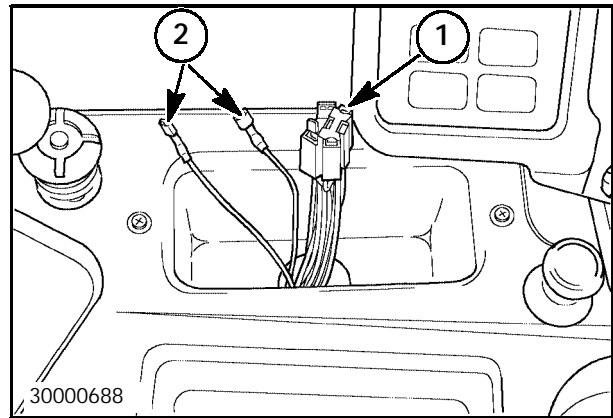
83

11. Remove the two screws, 1, from the right hand side console and remove the fabric insert from the pocket, 2.



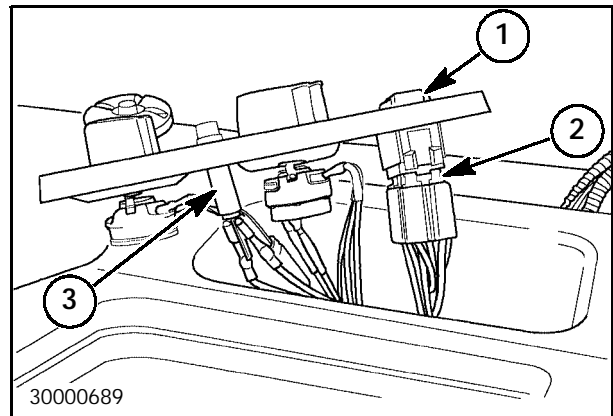
84

12. Place the three-point hitch wire harness below the right hand side console and position the harness with the connector for the manual switch, 1, and auto indicator lamp wires, 2, up through the center hole in the pocket.



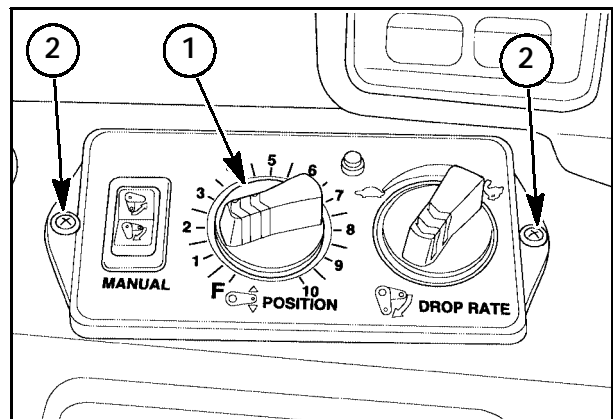
85

13. Position the control panel, 1, on top of the pocket and route the wiring for the command and lowering rate potentiometers down through the center opening in the pocket.
14. Attach the connector to the manual switch, 2, and install wire TP-1A to the side of the auto indicator lamp that is stamped 12V DC. This is the positive side of the lamp. Connect wire TP3 to the negative side of the light, 3.



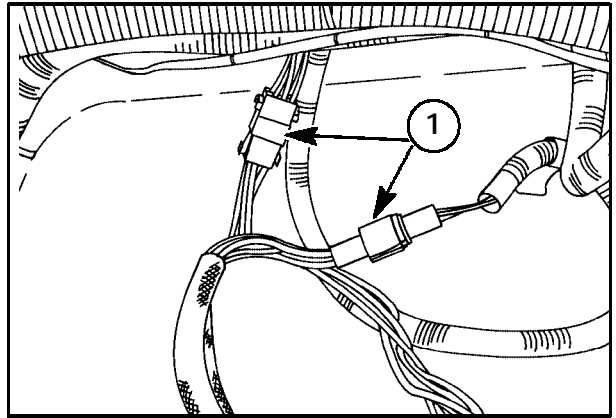
86

15. When the wires are connected properly, place the control panel, 1, on top of the right hand console and secure it with the two cap screws, 2, which were removed in step #11 of this procedure.



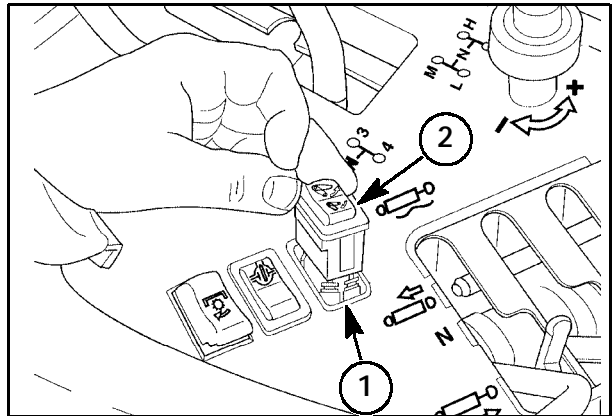
87

16. Plug the command and lowering rate potentiometers, 1, into the three point hitch wiring harness.



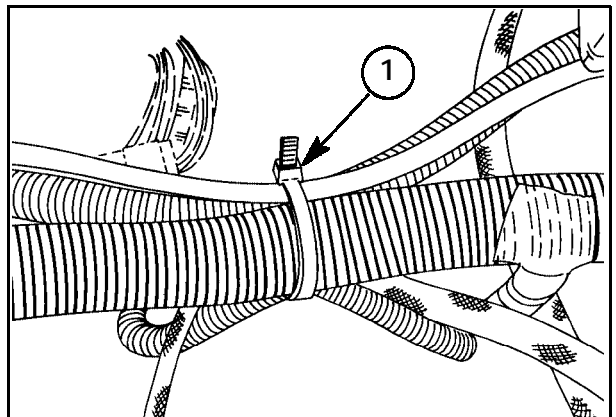
88

17. Install the connector on the 3-point wiring harness, 1, into the base of the automatic switch, 2. Make certain that they snap into position properly.



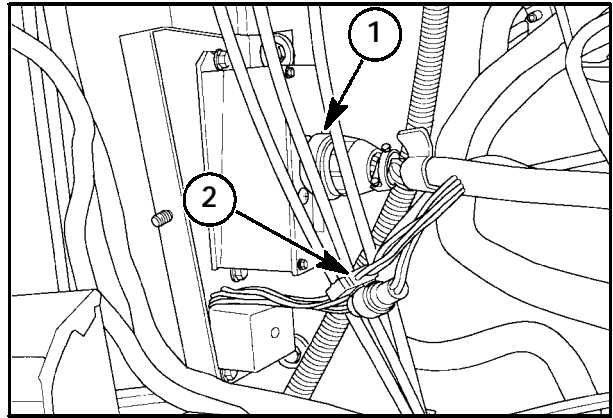
89

18. Group the wiring under the right hand side console together and place a wire tie, 1, around the cab main wiring harness and the 3-point hitch wiring harness.



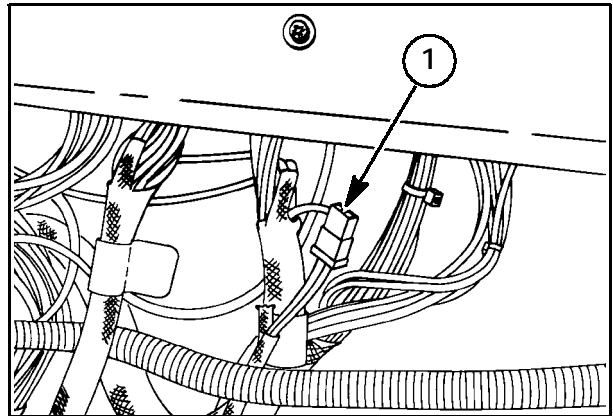
90

19. Connect the wiring harness adapter to the controller, 1, and tighten securely. Connect the wiring adapters for the lowering rate controller, 2.



91

20. Plug the two wire white connector, 1, (wires TP-1B and TP-1A) onto the white connector on the bottom of the fuse and relay panel. Make certain that the connection is tight.



92

21. Route the 3-point hitch wiring harness down through the rear access panel opening located on the right rear of the cab floor.

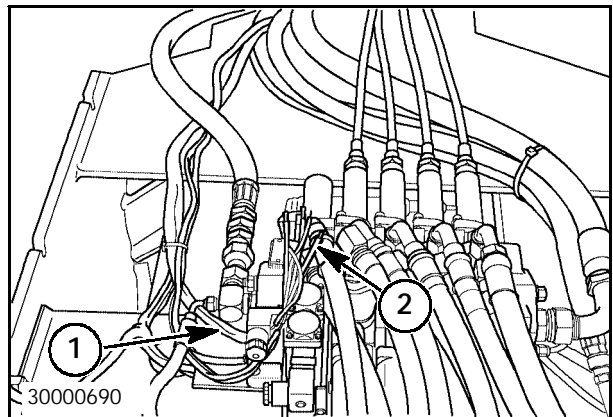
Thread the harness through the horseshoe shaped guide on top of the hydraulic manifold to the implement valve assembly left hand side.

The branch of the harness that leads to the feedback potentiometer, 1, is routed under the implement valve assembly and down to the right hand corner of the rockshaft. The individual wires for the raise and lower solenoid, 2, should be routed to the left hand side of the implement valve.

Proper routing of the wire harness follows the same path as the rear frame wire harness currently occupies.

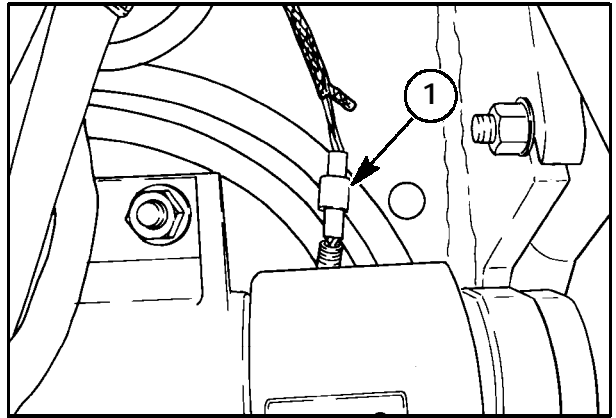
Pull any slack in the harness toward the cab right rear opening. Pull the slack up inside the cab floor, bundle it, and tie strap it.

Be certain that the harness is laying flat in the right rear cab opening and will not be compressed when the rear access panel is reinstalled.



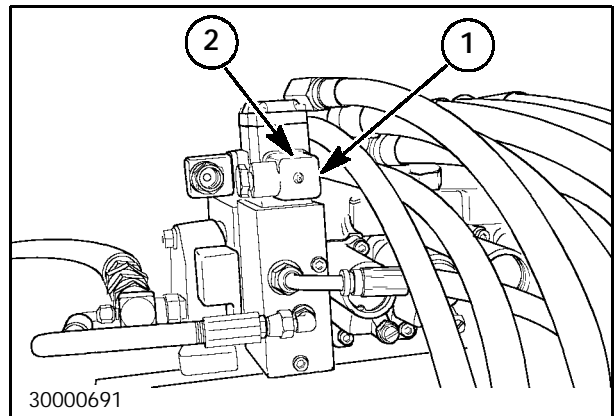
93

22. Connect the feedback potentiometer connector in the 3-point hitch wire harness to the feedback pot wiring, 1, located on the right hand side of the rockshaft. Make certain that the connectors are tight.



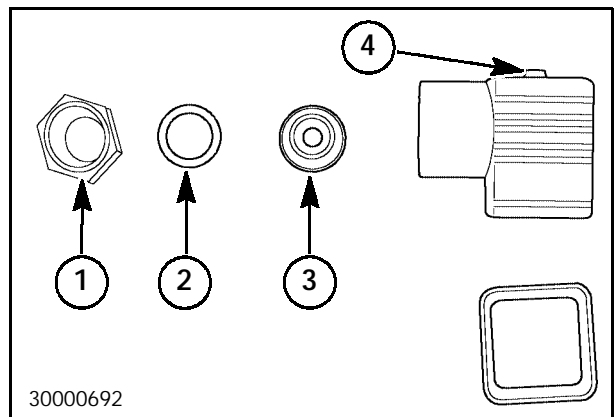
94

23. Remove the center screw, 1, from the rear (raise) solenoid valve connector, 2. Remove the connector from the valve. Do not lose the black rubber sealing cap.



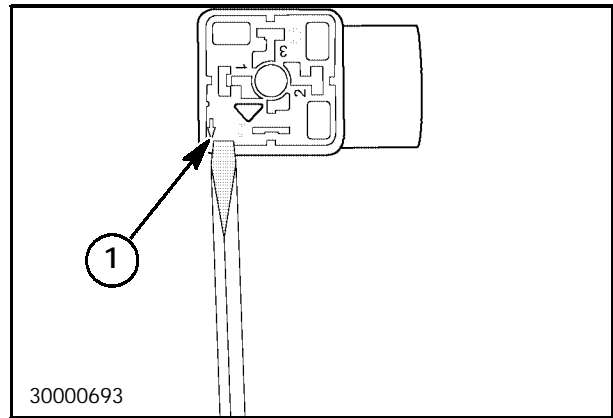
95

24. Unscrew the wire harness adapter, 1, from the connector and remove the washer, 2, and seal, 3, from the connector body, 4.



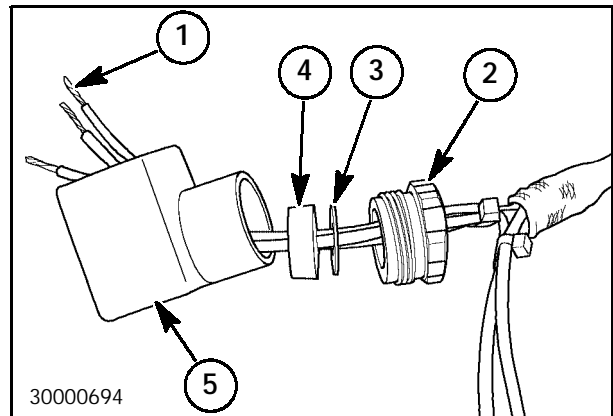
96

25. Insert a small screwdriver into the slot indicated by the arrow on the face of the connector body, 1. Pry upward on the body and pry it out of the connector housing.



97

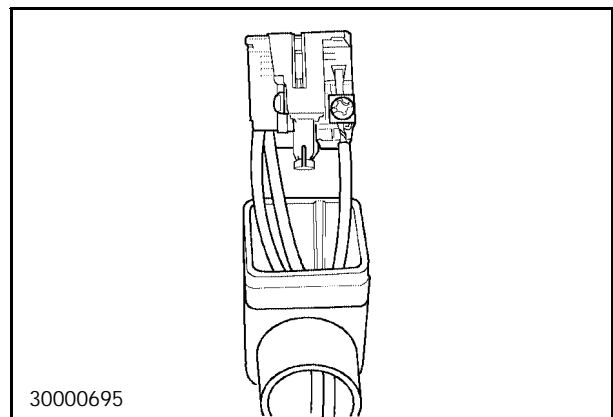
26. Route the three wires (TP-1F, TP-1E and TP5C), 1, through the adapter, 2, washer, 3, and seal, 4. Position the wires in the body of the connector, 5.



98

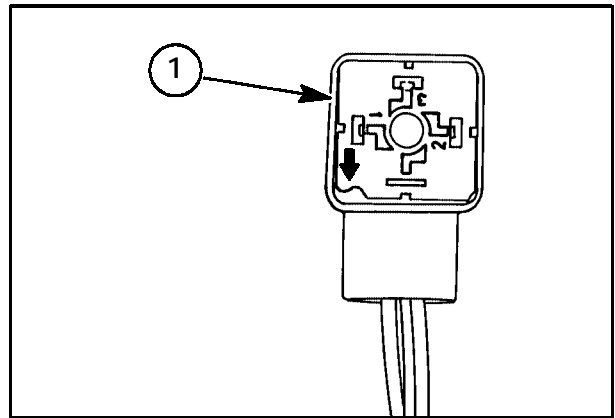
27. Each connector body is clearly marked 1-2-3 on the face of it. Insert the wires to the proper location and tighten the screws. Attach the wires to the body using the following chart:

LOCATION	WIRES
1	TP-1F, TP-1E
2	TP-5C
3	Blank



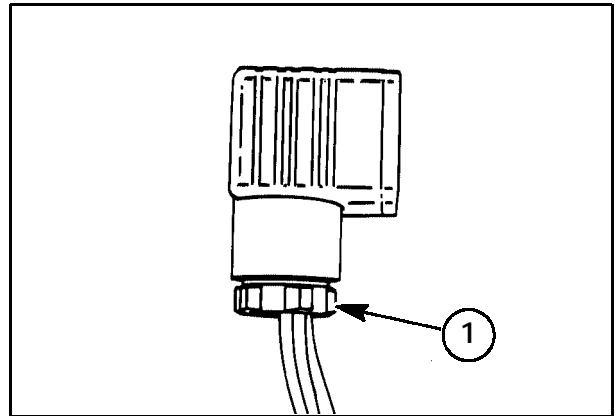
99

28. Snap the body, 1, back into the connector housing. Orientate the body into the housing so that the arrow on the face points toward the connector wire opening as shown.



100

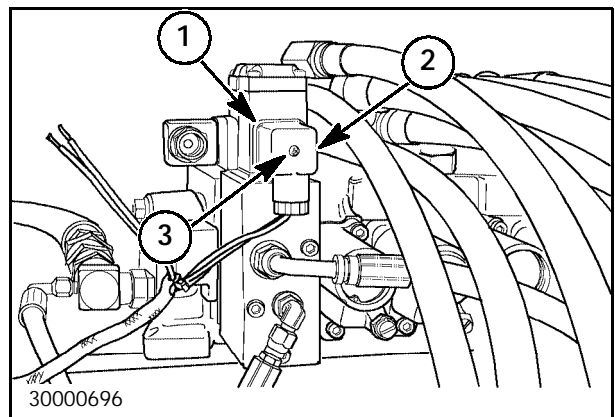
29. Position the seal and washer into the wire opening and screw the adapter, 1, back into the bottom of the connector housing.



101

30. Place the rubber seal over the nose of the rubber connector, 1, and install the connector on to the raise solenoid, 2. Install the center screw, 3, and tighten securely.

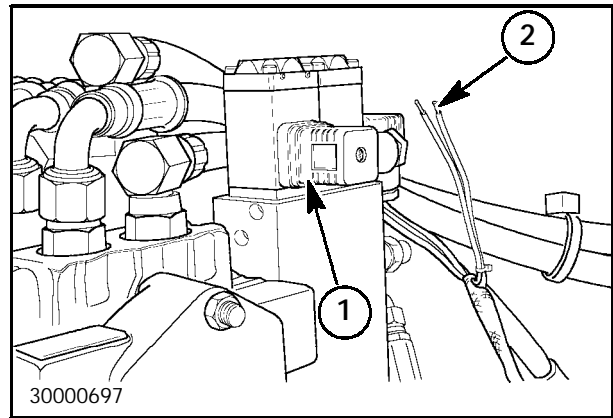
NOTE: When assembled properly the connector will point downward as shown so that rain water cannot enter the wire connections. The solenoid valve has a wide prong on it that only permits assembly in one location. By installing the body into the connector as detailed the connector will be orientated properly.



102

31. Repeat steps 28 through 33 for the front (lower) solenoid, 1. Connect the two wires, 2, (TP-1F and TP-17) as indicated in the following chart:

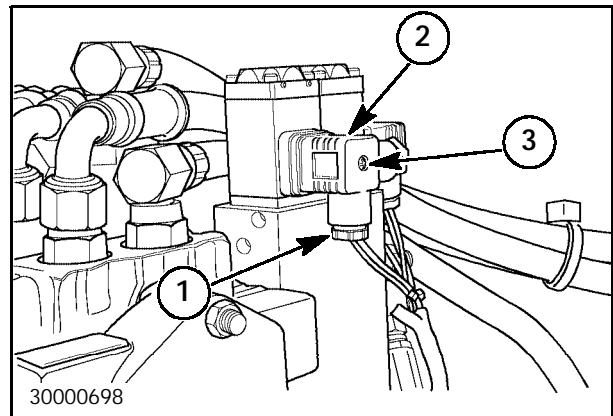
LOCATION	WIRES
1	TP-1F
2	TP-17
3	Blank



103

32. Place the rubber seal over the nose of the rubber connector and install the connector, 1, on to the lower solenoid, 2. Install the center screw, 3, and tighten securely.

NOTE: When assembled properly the connector will point downward as shown so that rain water cannot enter the wire connections. The solenoid valve has a wide prong on it that only permits assembly in one location. By installing the body into the connector as detailed the connector will be orientated properly.

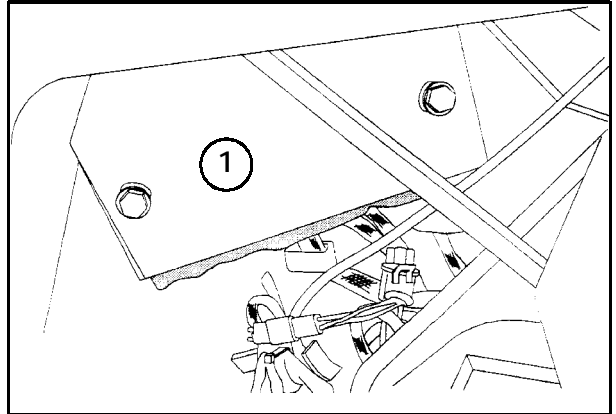


104

SECTION 4

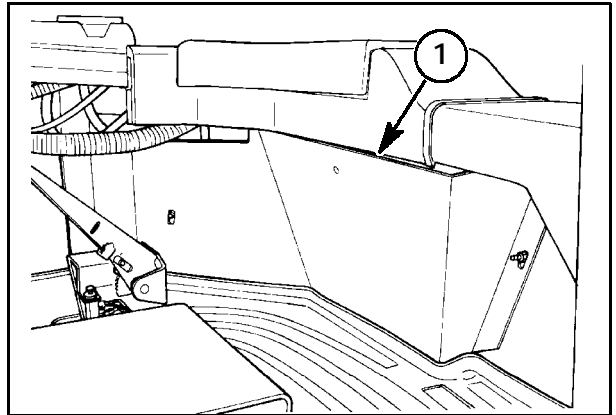
TRACTOR REASSEMBLY

1. Install the rear access panel, 1, to the right rear corner of the cab floor. Be careful not to pinch any wires routed through the opening.



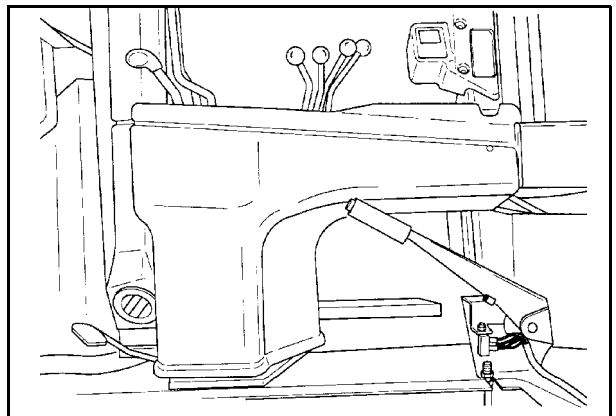
105

2. Install the cab rear shield, 1, with the wing nuts which was removed in the tractor preparation section of these instructions.



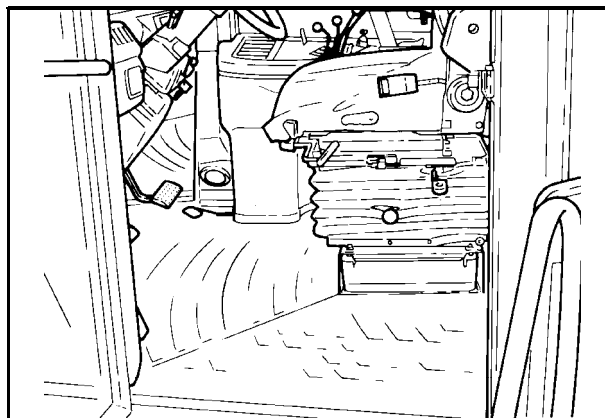
106

3. Install the right hand side console lower panel as detailed in Section 11 - of the Buhler Versatile Large 4WD Series service manual.



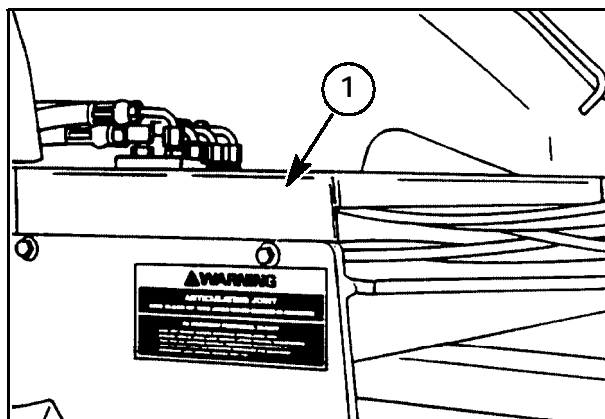
107

4. Install the seat into the cab as detailed in Section 11 - Cab of the Buhler Versatile Large 4WD service manual.



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5. Install the implement valve shield, 1, which was removed in the tractor preparation section of these instructions.
6. Install the wheels to the tractor and torque the hardware to 710 N·m (525 ft. lbs.).
7. Connect the battery cables as detailed in Section 3 - Electrical of the Buhler Versatile Large 4WD service manual.
8. Check the hydraulic fluid level and top off if necessary.
9. Start the tractor and operate the 3 point hitch in the manual and automatic modes and check for any leakage and make certain that no wires or hoses are pinched.

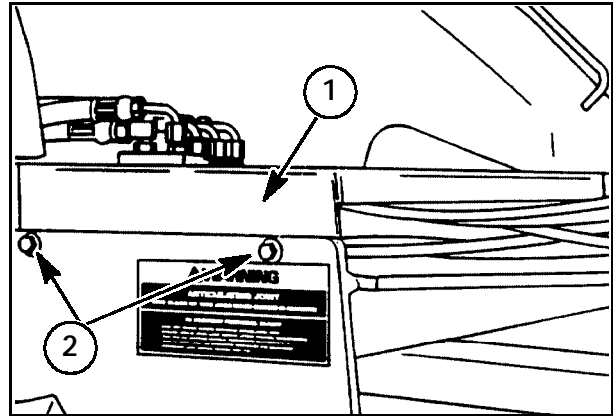


109

FINAL ADJUSTMENTS

RATE OF RAISE

1. Remove the implement valve shield, 1, by removing the four attaching screws and lock nuts, 2.

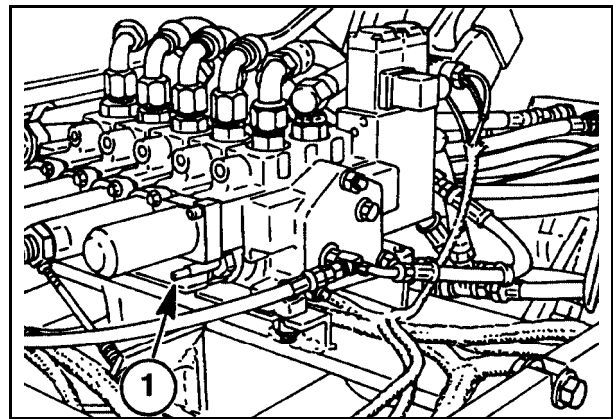


110

2. Turn the 3PT Hitch Valve flow control stem, 1, CCW to increase the rate of raise and turn the stem CW to decrease the rate of raise. The operator can set this adjustment to any position desired for the implement being attached to the tractor.
3. Install the implement valve shield and attaching hardware.

⚠ WARNING ⚠

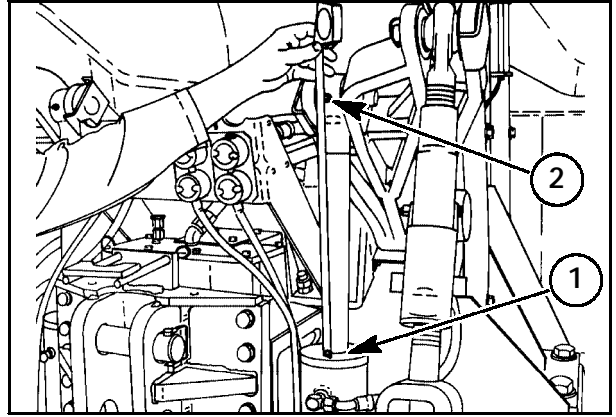
Only adjust the rate of raise when the 3-point hitch controls are in neutral position and the tractor is shut off.



111

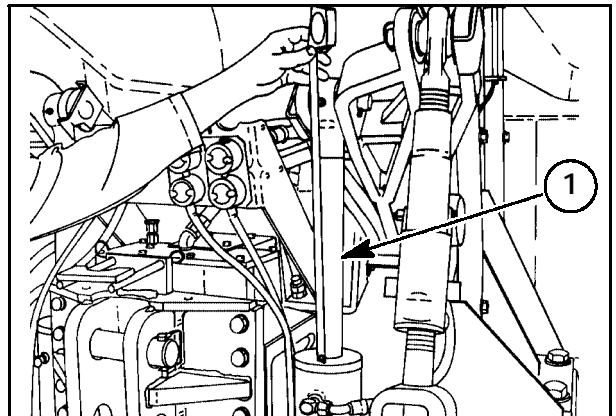
FEEDBACK POTENTIOMETER

1. Park the tractor on a level surface, set the parking brake and engage the articulation lock.
2. Engage the manual switch and raise the hitch to the full up position.
3. Turn the engine off.
4. Measure the length of the exposed lift cylinder rod from the base of the rod, 1, to the grease zerk, 2.
5. Start the tractor and lower the 3-point hitch.
6. Engage the automatic mode of operation and raise the hitch to the full up position
7. Turn the engine off.



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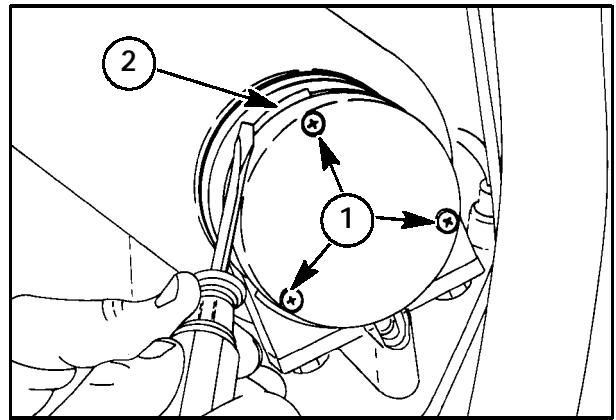
8. Measure the length of the exposed lift cylinder rod, 1. This measurement should be approximately 6 mm to 5 mm (1/4" to 3/16") shorter than the measurement obtained in step 4 of this procedure.



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9. If the measurement is not within specs, loosen the feedback potentiometer cover screws, 1.
10. Adjust the pot by rotating the potentiometer cover plate tab, 2, CW to raise the hitch and CCW to lower the 3-point hitch.
11. Tighten the adjustment screws and repeat the measuring procedure as detailed in this procedure.
12. A final quick check for the proper adjustment is to lift the 3-point hitch in the automatic mode. Switch to the manual mode and depress in the raise position. The lift cylinder should extend approximately 6 mm (1/4") upward from the full automatic raise position.

IMPORTANT: In the automatic raise mode, the 3-point hitch must automatically stop raising before the cylinders are fully extended.

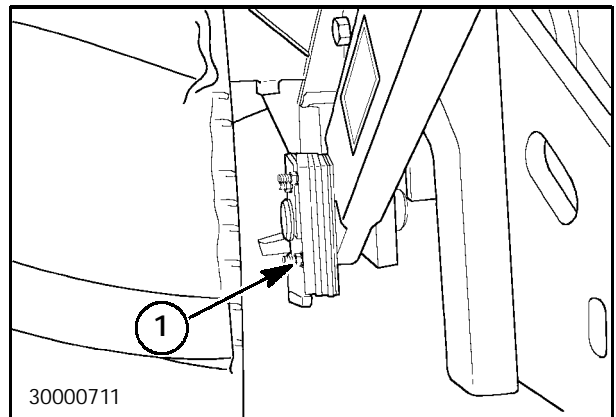


114

INSTALLING SHIMS

Adding shims to the rear frame of the tractor will prevent the lower links from contacting the tires when they are not connected to an implement and are free to move side to side. Use shims so that the lower links do not contact the tires when in their maximum sway position, or when the lower links are unhooked from the implement.

1. Push the lower links away from the tire and install the shims, 1 and the top carriage bolt. The head of the carriage bolt should be facing the tractor. Install the locknut on the carriage bolt and tighten the hardware securely.
2. Make certain the right amount of shims are installed so that the lower link cannot interfere with the tire.
3. Repeat steps one and two on the opposite side of the tractor.
4. Raise the 3-point hitch and install the lower carriage bolt with the head of the carriage bolt facing the tractor. Install the locknut and tighten the hardware securely.
5. Repeat step 4 on the opposite side of the tractor.



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HITCH CONVERSION

The 3PT Hitch lift linkage can be converted from a CATIVN to CATIIIW by following the appropriate tractor Operator's manual (Buhler Versatile Large 4WD). A single upper bushing and two lower bushings are included with each kit to facilitate the conversion. Store the bushings in the tractor tool box when not in use.

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